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THE DUBLIN JOURNAL OF MEDICAL SCIENCE.

EDITED BY
JOHN WILLIAM MOORE, B.A., M.D., M.Ch., Univ. Dubl.;
FELLOW OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND;
PHYSICIAN TO THE MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY.

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THE DUBLIN JOURNAL

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MEDICAL SCIENCE.

JANUARY 1, 1887.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*A Case of Myxœdema.*[a] By C. J. NIXON, M.B., LL.D., Univ. Dubl.; Fellow of the Royal University and of the College of Physicians; Senior Physician, Mater Misericordiæ Hospital; Consulting Physician, Central Criminal Asylum, Dundrum.

A FEW years ago, through the courtesy of Dr. Ord, I had an opportunity of seeing some cases of myxœdema which were under his observation in St. Thomas's Hospital. The symptoms of this disease are so characteristic and so uniform in their occurrence that it may, ordinarily, be recognised *de visu*. At first the œdematous condition might be regarded as an evidence of renal or cardiac disease; but the history of the case, the characters of the œdema, the peculiar facies, the mental and nervous symptoms present, and the atrophied condition of the thyroid gland, all constitute an affection of a specific and distinctive type. I am not sure that any example of myxœdema was ever brought before the members of my profession here, hence I thought an instance of it of sufficient interest to bring before the Medical Section of the Academy. The notes are compiled from particulars furnished to me with great care and accuracy by my resident, Mr. Thomas Carr.

CASE.—Anne P., aged forty, married, was admitted into hospital on the 1st of November last. She is the mother of seven children, two of whom died in infancy from croup; the surviving children are strong and

[a] Read before the Medical Section of the Academy of Medicine in Ireland, Friday, November 19, 1886.

healthy. The family history is a satisfactory one; her parents, brothers, and sisters, being free from disease; there is no syphilitic taint in the case.

Until three years ago the patient's health was exceptionally good. About this time she began to suffer from profuse menstruation, which recurred at intervals of three weeks during a year, and, subsequently, at intervals of six weeks. The discharge usually lasted for eight days. Some time after the menstrual disturbance had set in she noticed, and her friends remarked, a change in the expression of her face. It got very broad, her lips became thick and pendulous, and she experienced a difficulty in speaking and in making herself understood by others. Her voice became thick and guttural, and she had a difficulty in raising it. She next noticed that her hands became swollen, quite rough, altered in appearance, and clumsy in movements. She found a difficulty in sewing, in making some home-made bread, and in writing. Her memory became defective, particularly with regard to recent events: if she read a book or a newspaper, and left down either, she entirely forgot what she had just been reading about. She, moreover, had a great difficulty in adding figures together, although before her illness she was rather quick in this respect. Getting frightened about her altered appearance and the general condition of her health, she presented herself for admission to the hospital.

The points noted upon examination of the case were as follows:—The appearance of the patient is peculiar. The face is broad and pale, except under the malar bones, where there is a delicate circumscribed flush of a roseate character, which becomes greatly brightened in colour under excitement. The eyelids are distinctly puffy, but do not pit readily on pressure, and there is some sub-conjunctival œdema present. The skin of the face generally is white, shining in appearance, and, under the eyelids, porcellaneous in aspect. Under the chin it is loose and flabby, whilst, corresponding to the posterior triangles of the neck, there is on each side a large boggy swelling, apparently consisting of an aggregation of adipose tissue. The lips are large, blubber-like, and pendulous; they are moved with some difficulty; and the face generally is devoid of expression—during laughter it is idiotic in aspect. The nose is thick, and the alæ nasi considerably expanded. The tongue is somewhat large when protruded, and the soft palate is pendulous and wanting in tone. The gums are extremely soft and spongy, the breath is fœtid, and the back teeth have been lost—in the lower jaw there are only six teeth. There is considerable swelling of the hands, legs, feet, and of the skin over the back; but the œdema is of a solid character, and does not pit upon pressure. The hands present somewhat the spade-like appearance described by Sir William Gull, and the skin on the back of them is rough and scale-like in character. The skin throughout the body is dry, in parts furfuraceous, and shows no evidence of the exercise of a sudo-

riferous or sebaceous function. The hair of the head, and that on the pubes, has become extremely thin; and in the axillæ there is no vestige of hair observable. Hair is absent generally over the surface of the skin, except on the posterior aspect of the cheeks, which are covered by long downy hair. There appears to be complete absence of the thyroid gland. There is no enlargement of the liver or spleen, and the digestive system appears to be normal. The urine is pale in colour, occasionally deposits pale-coloured urates, is of a specific gravity of 1020, acid in reaction, and free from albumen and sugar. It presents nothing abnormal on microscopic examination. Dr. Cruise kindly made a quantitative estimation of the amount of urea present, according to Esbach's method. There are only five grammes per litre—a little over two grains to the ounce.

The impulse of the heart is feebly marked, the first sound ill-defined, and the second aortic sound is sharply accentuated. It is difficult to form any opinion as to the state of the arteries from the existence of the œdema. The radial pulse is weak and compressible, and usually at the rate of 76 beats in the minute. The sphygmogram [submitted] represents its characters, which are not peculiar.

A careful examination of the blood in reference to the number of corpuscles was kindly made for me by Dr. Scott with Zeiss's hæmatocytometer. The red cells number only 3,000,000 to the cubic millimetre; the white cells are increased to the proportion of one in twenty.

The patient's temperature has been, whilst under obervation, always subnormal, ranging from 95·8° to 97·8° F.; it never reached 98°. She invariably feels cold, even during summer, and is obliged to wear very warm clothing.

The nervous symptoms noted were—a slow and somewhat tottering gait; common sensibility is blunted, and a feeling of pins and needles is occasionally complained of in the back. The tendon reflexes are exaggerated, especially in the upper limbs; the superficial reflexes appear to be lost. She is nervous, especially when walking on a wet floor, or crossing over a small drain or ridge in the country. It has been remarked of her by the other patients in the ward that she is very slow in understanding what is said to her, slow and deliberate in replying to questions or in doing anything that she is asked to do. Her disposition is quiet and tranquil in the extreme, and she is a favourite with her companions in the ward. She is particularly drowsy, having an almost constant desire to sleep.

All the special senses, according to the patient's own statement, are impaired. She has suffered from buzzing or roaring in the ears, but this condition does not now exist. Sight is fairly good, but, with prolonged use, becomes weak. The examination of the discs and retinæ disclosed nothing abnormal.

For the past month or two she complains of an ugly smell coming, apparently, from her throat, and she remarks that this has now become constant in existence.

There has been some difficulty in eliciting these particulars, as the patient's intelligence is of a rather low type, and she is apt to contradict herself when questioned repeatedly upon the symptoms of her disease.

The members of the Academy who have had an opportunity of examining the patient exhibited will readily recognise the condition faithfully pourtrayed by Sir William Gull,[a] in his paper on "A Cretinoid State Supervening in Adult Women." The outline of the face; the smooth and fair texture of the skin, with its porcellaneous aspect in parts; the thick spade-like hands; the swelling of the lips and alæ nasi; the mild and gentle expression, with a mind evincing a placid and lazy indifference to surrounding circumstances, are the peculiar features to be noted. Sir William Gull further calls attention to the polysarcia which accompanies the condition described. In this paper there is no attempt made to establish a pathological basis upon which to found a theory of the disease. But, apart from the interest attached to the description of a set of symptoms at once novel and obscure, it suggests the possibility of a connection between the cases observed and cases of sporadic cretinism, reported by Dr. Hilton Fagge as occurring in certain parts of England. In these latter cases there are, as in those noted by Sir William Gull, the peculiar alteration of the face, the thick blubber lips, the coarse hands, the defective intelligence, and the mild and tranquil disposition.

Dr. Fagge,[b] in his account of sporadic cretinism, dwells upon signs which are of some significance. Firstly, that the cases are associated with atrophy of the thyroid gland; and, secondly, that soft lobulated tumours, the size of a hen's egg, are found on each side of the neck in the posterior triangles. So far, a certain obscure relation seems to be established between cretinism of the sporadic form and the condition described by Sir William Gull, but the connection between this state and myxœdema, or the relation which atrophy of the thyroid gland holds to the latter—as effect or cause—is not touched upon.

Before, however, pointing out the relation of myxœdema to atrophy or absence of the thyroid gland, I may incidentally remark that the weight of evidence is strongly in favour of goître and

[a] Trans. Clin. Soc. Vol. VII.

[b] Medico-Chirurgical Transactions. 1871.

cretinism being the effects of the same unknown cause. Although the Sardinian Commission on Cretinism and Goître reported, in 1845, that these diseases were essentially distinct, and that their frequent co-existence in the same locality was due to a simple coincidence, Fodéré and Tourdes, most competent observers, show that both diseases owe their origin to the same cause, and are closely connected by hereditary influences; whilst Baillarger, in his work on goître and cretinism, points out that three-fourths of cretins are goîtrous, and that the gradual destruction of the thyroid gland by disease develops the cretinous condition. A protective influence against cretinism through the existence of a thyroid gland cannot, however, be conceded, until the state of the gland in cases where goîtres exist is determined, it being well known that goître may involve complete destruction of the gland tissue. So far as our present knowledge goes, I believe I am correct in stating that the nexus between thyroid atrophy and cretinism has not been clearly established.

Much more determinate, however, is the relation of myxœdema to atrophy, or ablation of the thyroid gland. Dr. Ord, whilst naming this disease from the special changes found in the connective tissue of the skin, points out the constant association of these changes with atrophy or absence of this gland. This distinct view of the nature of the disease is all the more important, in consequence of a similar train of symptoms to those described by Dr. Ord, being described by Charcot under the name of Cachéxie Pachydermique,[a] and by Köcher, of Berne, as cachexia struma priva. Both Reverdin and Köcher found that as a result of removal of the thyroid gland for goître, a condition of solid œdema was produced, with the development of a cretinous condition of mind.

Perhaps no better illustration of the practically useful effects of carefully conducted vivisection experiments is afforded than by those showing the effects of removal of the thyroid gland in animals. Schiff, Wagner, and the Italian observers, Sanguirico and Canalis, have shown that, after ablation of the thyroid gland, the animals operated on became idiotic and died in a comatose condition. More recently Professor Victor Horsley[b] has, with extreme care and ability, noted the conditions following extirpation of the thyroid gland in the monkey. The gland was removed in such a way as

[a] Le Progrès Médical. June, 1880.
[b] Brit. Med. Journ. January, 1885.

to obviate the effects of hæmorrhage, and to avoid, as far as was possible, injury to any of the nerves in its vicinity. The symptoms produced are very remarkable, and coincide in all important particulars with the symptoms noted after removal of the thyroid gland in man by Reverdin and Köcher. The monkeys experimented upon developed tremors, gradual weakness of the limbs, anæmia, œdema well marked in the eyelids, and an apathetic and listless condition which ended in complete imbecility. They finally died in a state of coma. The *post-mortem* examination revealed the myxœdematous change in the tissues in a remarkable degree, as shown by the table submitted :—

Table of Analysis of the Tissues, showing the amount of Mucin before and after Thyroidectomy in the Monkey. By W. D. Halliburton. M.D.

	Skin and Subcutan. Tissues	Tendon	Muscle	Parotid Gland	Submaxillary Gland	Blood
I. Normal—						
Monkey (*a*) - -	·89	·39	0	—	—	0
„ (*b*) - -	·9	·5	0	0	·01	0
II. Abnormal, after Thyroidectomy—						
No. 1 lived 55 days -	3·12	2·55	0	·72	6·0	·35
„ 3 „ 32 „ -	—	—	—	—	—	—
„ 5 „ 49 „ -	2·3	2·4	Trace	1·7	3·3	0·8
„ 10 „ 7 „ -	·45	·904	0	Trace	·16	Very small trace

In the face of these facts no one can, I think, refuse to admit the influence exercised by atrophy or removal of the thyroid gland in the production of myxœdema.

Naturally the question arises as to what the nature of this influence is—whether is the thyroid atrophy a primary change or one secondary to pre-existing disease in the nervous system? Irrespective of its function in relation to the cerebral circulation, which is a somewhat obscure one, the thyroid gland appears to exercise a two-fold office in the animal economy. By its large vesicles it excretes from the blood a large quantity of mucin, or a substance akin to it, and it has further a hæmatogenous function, as shown by the large quantity of lymphoid elements found in it. The removal of the gland is attended by an increase in the amount of mucin in the tissues which naturally secrete it, by the assumption of a muciparous function by a gland which ordinarily produces no

mucin,[a] and by alteration as to number in the corpuscular elements of the blood. It occurs to me that we may regard the thyroid gland as one of those rudimental organs which, by removing certain elements from the blood, fit this fluid for the nutrition of other parts, and in this way effect a balance in the processes of nutrition. Thus the thyroid gland in its function may be said to furnish another instance of what Sir James Paget designates complemental nutrition. We have examples of this function in the mammary glands of the male, the delicate hair which covers the surface of the body, the relation of the growth of the beard to the development of the generative function, &c. The experiments of Sir Philip Egerton are also illustrative instances. In bucks that are castrated whilst the antlers are growing, it is found that the growth of the antlers is checked, and that they remain as stunted or irregular nodules of bone projecting from the surface. If castration be performed when the antlers are full grown, they are shed as usual at the end of the season, but at the end of the succeeding season they are replaced by low conical stumps. These instances serve to illustrate how the growth of certain tissues, or the exercise of function by certain organs, modifies the nutrition of other structures with which they have apparently no connection. In this way the thyroid gland may minister to the nutrition of the skin and connective tissue by removing from the blood certain elements, amongst them mucin, which, in defect of this function, may by being retained in the blood lead to perversion of structure.

It is difficult as yet to pronounce any decided opinion as to whether the condition of the thyroid gland is the primary change in myxœdema, or that it is secondary to some lesion in the nervous system. Dr. Haddon,[b] in an interesting paper on the subject (*Brain*, Vol. V., p. 188, 1882), holds the view that the primary condition in myxœdema is an irritative lesion of the sympathetic. This induces a condition of generalised angiospasm, which depends either on a lesion of the vaso-constrictor or vaso-dilator filaments, and this angiospasm produces atrophy of the thyroid gland and a form of lymphatic obstruction which leads to the solid œdema of the skin and subcutaneous tissue. Köcher, who accepts this view, considers that in removal of the thyroid gland the sympathetics are injured or irritated by the ligatures placed on the vessels. His opinion,

[a] In the monkey, after removal of the thyroid gland, the parotid secretes mucin.

[b] Le Progrès Médical, 1880, kindly lent to me by Professor Purser, also contains some papers of Dr. Haddon dealing with the causation of myxœdema.

however, is negatived by the experiments of Schiff, who showed that if he merely exposed without removing the thyroid gland, and divided the nerves going to it, no effects like myxœdema followed, although there was considerable irritation of the nerves produced. What apparently affords support to Dr. Haddon's view is that the conditions noted in association with vaso-motor paralysis are exactly the reverse of those associated with vaso-motor spasm. Thus in exophthalmic goître we have elevation of temperature, a sweating skin, great excitement of the circulation, and a mental condition in which there is much excitability. In myxœdema, on the other hand, there is reduction of temperature, a dry harsh skin, and a mental condition allied to the torpor which we meet with in cold-blooded animals. However, as yet, no changes have been found in the sympathetic system to corroborate the view suggested by Dr. Haddon, and it is especially noteworthy that Professor Horsley found that, in his cases of artificially induced myxœdema, the sympathetic nerves showed no trace of structural alteration.

Dr. Ord was, at first, disposed to regard the nervous phenomena developed in cases of myxœdema as due to the effects of the altered connective tissue on the peripheral nerve endings; that the nerves were immersed in a padding of myxœdematous tissue, and that, as a result of the absence of its accustomed stimulus, the brain fails in nutrition, and hence the mental hebetude produced. Both Dr. Ord and others have, however, recently pointed out that in the course of myxœdema the changes in the connective tissue are not confined to that of the skin, that the blood-vessels and the principal organs of the body, including the brain and spinal cord, present signs of degeneration, so that there can be no doubt but that the nervous disturbances present are due to changes in the central nervous system. At the same time it is not improbable that the view first held by Dr. Ord is substantially correct, though in a modified degree. Central nervous disease does not of itself produce the peculiar train of nerve symptoms present in myxœdema; the widespread alteration which affects the peripheral nerves and touch corpuscles, and which leads to a blunted sensibility and delayed power of conduction, cannot be without influence on the mental and nervous states found in what may, I think, be fairly named "Ord's disease." In support of the view may be mentioned the observation made by M. Blaise in the "Archives de Neurologie," Vol. III., that in a case of myxœdema noted by him, the

mental disorder and swollen state of the integuments underwent amelioration simultaneously.

It is only necessary to add a brief word of comment on the view entertained by Dr. Mahomed as to the nature of myxœdema. This observer regarded the condition as a symptom of Bright's disease, because in a number of cases *post-mortem* examination showed structural changes in the kidneys. The solid nature of the œdema is accounted for by an attempt at organisation which the chronicity of the condition engenders. The rule is in myxœdema for albuminuria to manifest itself towards the termination of the case, because the kidneys suffer in the general trophic disturbance; but the history of cases of myxœdema, the experimental evidence that has accumulated in reference to it, and its nervous and mental peculiarities, show it to be a disease quite distinct from Morbus Brightii.

Why it occurs with such preponderating frequency in women is not clear. Women seem specially predisposed to affections of the thyroid gland. Basedow's or Graves' disease occurs in them, as contrasted with cases amongst males, in the proportion of two to one. Probably the periodical changes which the thyroid gland undergoes during menstruation may favour the development of disease in the organ.

It is interesting to note how far the labours of the physiologist and the physician go towards limiting or preventing operative procedures which, though brilliant in their immediate results, lead to conditions that imperil life. However commendable it may be to aid in the advancement of the progress of medicine or surgery, it is of undoubted advantage to recognise what should be looked upon as finality, and it is scarcely conceivable, in the present state of our knowledge regarding the relation of myxœdema to loss of function of the thyroid gland, that removal of this organ in its entirety should be undertaken.

ART. II.—*Micro-Organisms in Relation to Surgery.*[a] By FRANCIS T. HEUSTON, M.D.; Master in Surgery; Fellow of the Royal College of Surgeons in Ireland; Surgeon to the Adelaide Hospital; Lecturer on Anatomy and Registrar to the Carmichael College of Medicine; Fellow and Ex-Chairman of the Anatomical and Physiological Sub-Section of the Academy of Medicine in Ireland; Member of Convocation, Royal University of Ireland.

WE find on looking back in the history of surgery that there have been periods of great and sudden advances in the science, followed by periods of rest, and possibly in many instances of absolute retrogression. That this is so, I consider it sufficient to cite one instance amongst the many which exist, and the one I would select for illustration is the methods employed at different periods to restrain hæmorrhage, which has always been the principal cause of anxiety in the treatment of wounds, in many cases hindering the appropriate treatment being applied. Thus although the method we now prefer—that is to say, some form of ligature—was known to and practised by the early surgeons, Celsus, Galen, and many others, still it was again forgotten and lost sight of until casually re-discovered by Ambrose Paré, since which period it has become universally adopted. However, its introduction was remarkably slow, the method of its action not being explained until the present century, when Jones wrote his treatise on the pathological changes brought about by the application of the ligature. Even subsequent to this ligatures were looked on with distrust, as it was ascertained that union of the wound by the first intention was hindered by their presence, they acting as foreign bodies in the wound. This difficulty has, however, recently been overcome by the introduction of medicated ligatures composed of animal tissue, which are absorbed by the vital action of the part. It is of interest to note the methods employed to restrain hæmorrhage in the time of Parè, who, writing in 1634, gives the following:—

1. By medicines which have an astringent, cooling, drying, and agglutinative character.
2. Pressing the seat of hæmorrhage with the thumb until it ceases.
3. Ligature, including the soft tissues with the vessels.
4. Escharotics.
5. Cutting off the end of the bleeding vessel.

[a] Being the substance of an Introductory Address delivered at the Adelaide Hospital at the Opening of the Session of 1886–87.

Forty years later Wiseman, surgeon to King Charles II, writing in 1674, recommends Galen's powder of aloes, resin and hare's fur mixed with the white of egg, applied on dossils of lint to the bleeding points, also pledgets of lint dipped in boiling turpentine or boiling pitch and oil, cupping, emplastics, friction, and binding the remote parts for derivation. On reading Wiseman's five indications for the treatment of wounds, you find they were such as would now be used with the object of bringing about union by the first intention; thus, although his theory was sound, he failed in his practice. To bring the divided parts together he applied certain bandages and medicants, amongst which, under the name of vulneraries, we find comfrey, periwinkle, horsetail, adder's tongue, wild tansy, and snake root; and also powders composed of crab's eyes, powdered coral and nutmeg; the result of which, in addition to the application to restrain the hæmorrhage, was to set up such irritation and inflammation as to hinder the union he professed to seek for, this result being due to his following the treatment recommended, when it was thought necessary that a wound should not be allowed to heal until full suppuration had occurred, with the object of removing certain ill-humours which were supposed to be present.

In process of time it became understood that the sooner a wound could be healed the better. Surgeons ceased from using their complicated dressings, known under the name of vulnerary balsams (amongst which the oleum catellorum of Paré, composed of earthworms digested in white wine, oil of lilies, turpentine, aqua vitæ, and live puppy dogs boiled in oil, was the most famous)—incarnatives, glutinants, and cicatrisants—and applied simple water dressings (of which Paré spoke with great disdain). It was now found that wounds healed far more favourably, but there was still undue tendency to the occurrence of suppuration in any wound exposed to atmospheric influences, while early union was to be obtained in subcutaneous wounds even when of great extent. This gave rise to the conjecture that there existed in the atmosphere some material which was injurious to immediate union, and a number of theoretical explanations were proposed. For example, that it was due to the presence of oxygen, or to the moisture contained in the atmosphere, &c., none of which theories, however, obtained much credence, until Pasteur urged the suggestion that it was owing to the presence of certain organic germs which are always present in the atmosphere. It is more immediately to this subject I would

wish to draw your attention; however, desiring you to remember that it is only a theory, and although very generally accepted at present, it is necessary you should not consider that the question is finally settled. Remember, I have already stated surgery is a living science, and that continued advancement is necessary, and I have on one simple subject shown you, in a very superficial manner, the progress which has been made, bringing you to the present time in the treatment of wounds, when we are engaged in the elucidation of one of the greatest advances known in the history of surgery initiated by Lister, with such a result that we now perform operations which a few years ago would have been thought impossible. For example, the larger joints and the abdominal cavity were considered to be regions outside operative interference, and injuries to which were deemed necessarily fatal. Under the antiseptic treatment, however, both the large joints and abdomen have been frequently operated on within the last few years with perfect success.

Those of you who attended in our theatre during the past session have had the opportunity of witnessing certain operations on the abdominal cavity, performed for the first time in our Dublin hospitals—namely, those on the gall-bladder and kidney. You also have witnessed on many occasions severe lacerated wounds which healed without the formation of pus, this being considered almost an impossibility until very recently. I will now endeavour shortly to submit to you the grounds of this theory, the practice of which you will be able to observe for yourselves throughout the session.

That micro-organisms existed has long been suspected, as shown by allusions to their presence being made by the Roman authors, Lucretius, 95 B.C., and Terentius Varo, 116 to 27 B.C., but owing to the want of proper methods of observing their characteristics, and following out their life-history, the subject lay in abeyance until a recent date, when the perfection to which the microscope has been brought enabled their being studied with accuracy. That this was the great hindrance to the development of this theory until so recent a period is shown by the following extract from the writings of Dr. Goiffon, of Lyons, who, in a work written on the origin of the plague in 1721, states as follows:—"Minute insects or worms can alone explain these diseases. It is true they are not visible, but it does not therefore follow they are non-existent. It is only that our microscopes are not at present powerful enough to

show them. We can easily imagine insects which bear the same proportion to mites that mites bear to elephants. No other hypothesis can explain the facts. Neither the malign influence of the stars, nor terrestrial exhalations, nor miasmata, nor atoms, whether biting or burning, acid or bitter, could regain their vitality once they had lost it. If, on the other hand, we admit the existence of minute living creatures, we understand how infection can be conveyed in a latent condition from one place to break out afresh in another."

Amongst the first of the scientists who have so recently revived this theory we find Ehrenberg, who, in 1828, showed those organisms to exist; while Schwann, in 1837, stated that the atmosphere was always laden with fermentative and putrefactive germs; and Henle, writing in 1840, stated that the contagiousness of infective diseases was due to the presence of living germs in the body. But these isolated statements received little attention until Pasteur, in 1857, was enabled to show by his cultivations of micro-organisms in fluid media, that certain micro-organisms, after having passed through many generations in suitable cultivation grounds, were still capable of propagating to inoculated animals an identical disease to that from which they were originally obtained, thus showing that there existed micro-organisms which were capable of transmitting distinct and separate diseases, and that definite results were to be obtained by definite propagations.

The aggregation of this knowledge into definite theory has been only matured within the last few years, and has been chiefly due to the genius of Koch, who, by the introduction of solid cultivation grounds, has been enabled to obtain much more certain results than were possible by the use of Pasteur's fluid media. By this method the micro-organisms which give rise to a number of diseased conditions have been differentiated, and we may reasonably hope that before long the life-history of most of the organisms will be fully known, when we shall be enabled to comprehend under what conditions they are most liable to propagate rapidly, and by what means their propagation may be retarded or altogether arrested. We shall then be in a position to treat, not mere indications of disease, as is usually our practice at present, but can turn our attention to the destruction of the origin of the diseased condition. Not alone this, but we shall be enabled to recognise more certainly, and at an earlier stage, the presence of certain diseases. That such is practicable is shown by the fact that the

presence of tuberculosis has been proved at a period when the existence of disease could not otherwise be certain, and that at certain cliniques in Vienna no case of urethral discharge is diagnosed as a gonorrhœa until the gonococcus has been proved to be present. That micro-organisms exist in the ordinary atmosphere I will now prove, having here specimens obtained in this theatre at a period when there was no reason why they should be particularly numerous. I, in fact, selected a time when no person had access to the theatre for some hours previously.

I placed two cultivation grounds of this size (two square inches) on both sides of the theatre, allowing them an exposure of a quarter of an hour; they then, being carefully covered, were conveyed to the Physiological Laboratory of the Carmichael College,[a] where in a few days they showed various points of growth, one presenting 33 and the other 34 inoculations, which on further examination proved that 11 or 12 distinct varieties were present. Some of these were then transplanted and grown separately, which I am now enabled to show *en masse* (see Plate I.), and by these diagrams their microscopic appearances. These latter prove the presence of the three great divisions—moulds, yeasts, and schizomycetes.

These organisms have been shown to belong to the lower orders of plants, and are included in the class of fungi.

Nägeli has divided the fungi producing decomposition into—

1. Hyphomycetes, or moulds.
2. Saccharomycetes, or yeasts.
3. Schizomycetes, or fission-fungi.

The schizomycetes, with which we have to deal chiefly in disease, are to be found of various forms, as shown in the following classification, after Cohn:—

1. Sphærobacteria, Globules, Micrococcus (Fig. 2, Plate II.).
2. Microbacteria, Short Rods, Bacterium (Fig. 5, Plate II.).
3. Desmobacteria, Long Rods, Bacillus and Vibrio.
4. Spirobacteria, Spirals, Spirochæte and Spirillum (Fig. 6, Plate II.).

Again, the micrococci may be observed to exist singly, monococcus; doubly, diplococci (Fig. 3, Plate II.); in chains, streptococci (Fig. 1, Plate II.); or, in bunches, staphylococci (Fig. 2, Plate II.).

[a] I take this opportunity of acknowledging the valuable assistance given me in the preparation and cultivation of these specimens by Mr. J. Alfred Scott, F.R.C.S.I., Lecturer on Physiology to the Carmichael College of Medicine.

PLATE I.

Micro-Organisms obtained in Operating Theatre of Adelaide Hospital,
3 30 p.m., 16th September, 1886.

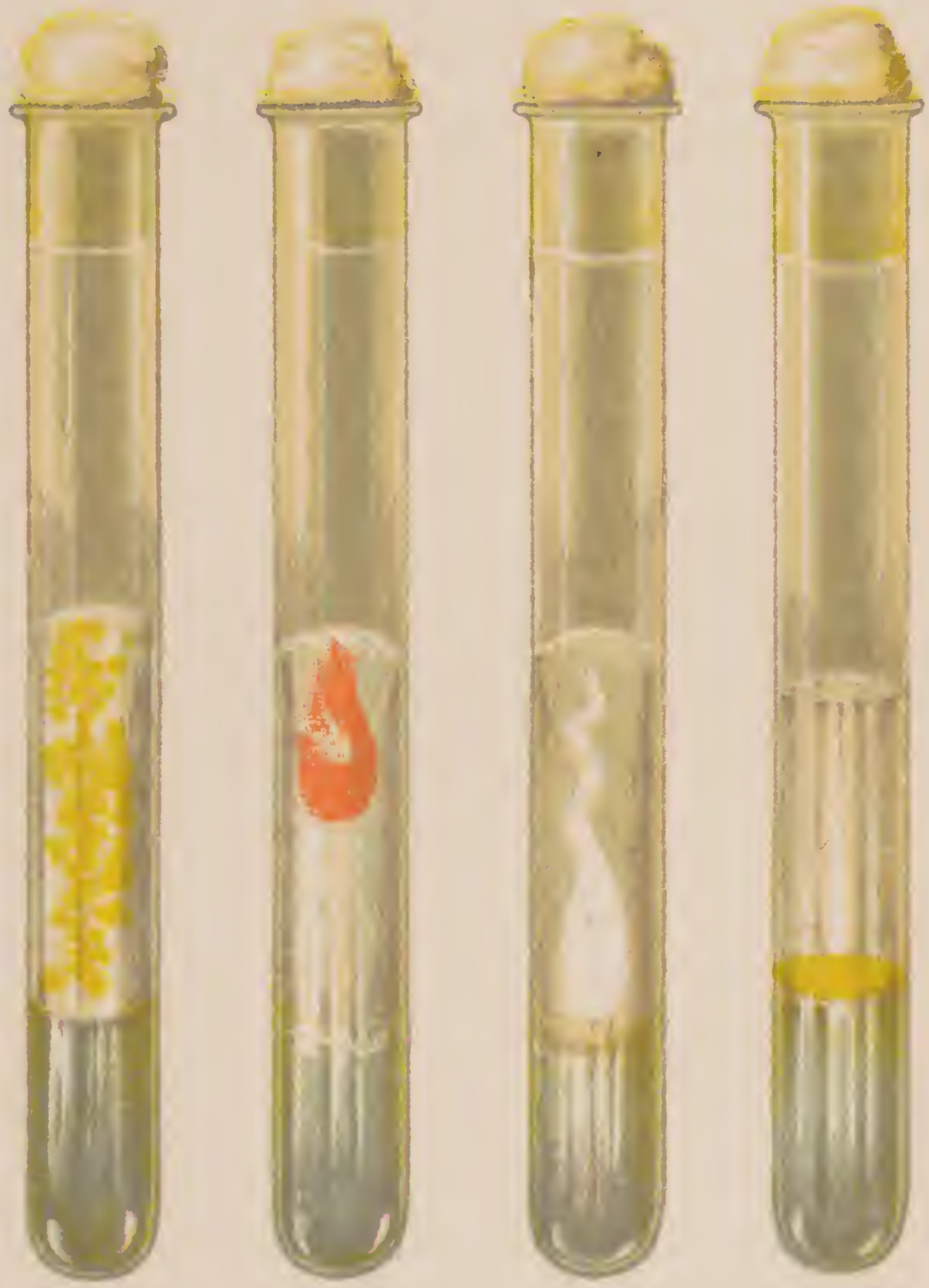

Fig. 1. Fig. 2. Fig. 3. Fig. 4.

Fig 1.—Streptococcus Pyogenes.
Fig. 2.—Micrococcus Rosaceous.
Fig. 3.—Staphylococcus Cereus Albus.
Fig. 4.—Micrococcus, similar to Osteo Myelitis.

FALCONER, DUBLIN.

That the pathogenic bacteria are specific beings, originating from and bringing forth their own peculiar species, gifted with unchangeable attributes, has been now proved by Gaffky. That they do not exist in healthy tissues, as stated by Koch, was proved by Hauser; while Tyndall has shown that no micro-organisms exist in the highest strata of the atmosphere, having exposed culture grounds for as long as twelve months on the higher Alps without their being contaminated.

George Klemperer, an undergraduate in Berlin University, made an important advance in this theory by proving that no suppuration occurs without the presence of micro-organisms. This has been quite recently further elucidated by Dr. Krautzfeld, of St. Petersburg, who shows that it is always possible to detect micro-organisms in the pus of acute suppurations both by means of cultivations and direct observation, and the culture of those in the tissues he considers to be the most important factor in the ætiology of acute suppuration. Those more frequently met with are the staphylococcus pyogenes and streptococcus pyogenes, which are distinct from one another, both morphologically and in their life-history. In a large number of cases of local acute suppurations, the micro-organisms obtain admittance by means of an external wound. Thus suppurations due to the staphylococcus pyogenes are generally situated near the locality in which the micro-organisms enter, such as is the case in the ordinary acute abscess, while those due to the streptococcus pyogenes are found at a distance from the place of injury, along the course of the lymphatic vessels, as is ascertained to be the case in pyæmia.

I now request, for a few moments, your attention to the diagrams I have here, showing those of the micro-organisms which have already received a fair degree of acceptation.[a]

The bacillus anthracis, described by Pollender in 1855, is the largest of the bacilli met with in disease, and is also the most virulent and difficult to destroy, withstanding most antiseptics for a long period. Those micro-organisms are to be found in large numbers in the blood of animals dead of malignant anthrax, which affection in the human being is popularly known as wool-sorter's disease, the usual method of infection being by inhalation of spores.

The bacillus tuberculosis (Fig. 5, Plate II.) was discovered by Koch in 1882, in connection with phthisis, but since that period it

[a] Subsequently microscopic transparencies of the principal micro-organisms in surgical diseases were shown by the oxy-hydrogen light.

has been proved to exist in a large number of tissues, and has been shown by Demme to be present in lupus. This bacillus may be demonstrated in the sputa, blood, and urine of those affected.

The micrococcus erysipelatosus (Fig, 4, Plate II.) was found by Fehleisen, in 1883, to exist in the lymphatics of the superficial layer of the corium and areolar and fatty tissue beneath, but was not to be detected in the capillaries or blood-vessels; this micrococcus is in character a streptococcus, but is distinct from the streptococcus of ordinary suppuration. Fehleisen has inoculated six cases of inoperable tumours with cultivations passed through many generations, and typical attacks of erysipelas resulted; in three of the cases—one of lupus, one of cancer, and one of sarcoma—the result was beneficial to the patient.

Micrococcus gonorrhœa (Fig. 3, Plate II.) was discovered in 1879 by Neisser, who called it the gono-coccus. It is in form a diplococcus, and is peculiar in being situated inside its cell. It has been found in the urethra, kidneys, conjunctiva, and rectum. A bacillus also probably exists in syphilis, but requires further investigation.

Pyæmia and septicæmia have for a long period given rise to a number of different theories as to the nature of their micro-organisms, some stating that they were bacilli, and others micrococci, a number of both being present, but the weight of evidence now points to the supposition that both those affections are due to the streptococcus pyogenes, single, and diplococci, with the occasional presence of staphylococci (Figs. 1 and 3, Plate I., and Figs. 1 and 2, Plate II.).

The last I shall bring under your observation is osteo-myelitis (Fig. 4, Plate I.), which Becker, in 1883, examined and described, but in this disease additional research is required, and I only mention it as there are strong reasons for supposing that it should be classified with those special forms of micro-organisms which are concerned in the process of suppuration.

To render this paper of practical value I append the following methods of preparing such antiseptic dressings, &c., as are chiefly in use at present:—

Boric Acid.

Lint - - - Boric acid solution, 30 per cent. in hot water, coloured by litmus. The lint is soaked in this solution, and when dried retains about half its weight of boric acid.

PLATE II.

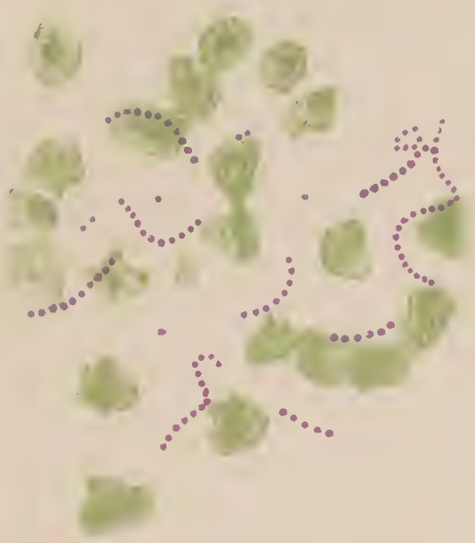

Fig. 1.—Streptococcus Pyogenes

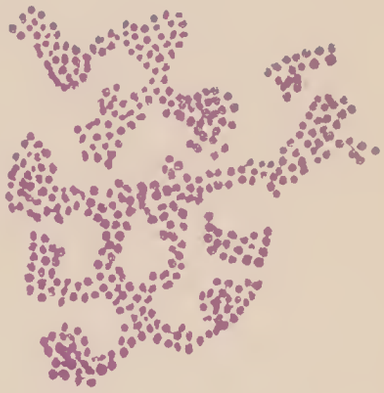

Fig. 2. - Staphylococcus Cereus Albus.

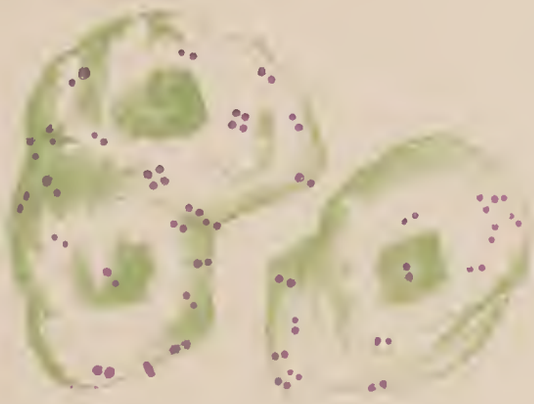

Fig. 3.—Micrococcus Gonorrhœa.

Fig. 4.—Micrococcus Erysipelatosus (after KLEIN

Fig. 5.—Bacillus Tuberculosis.

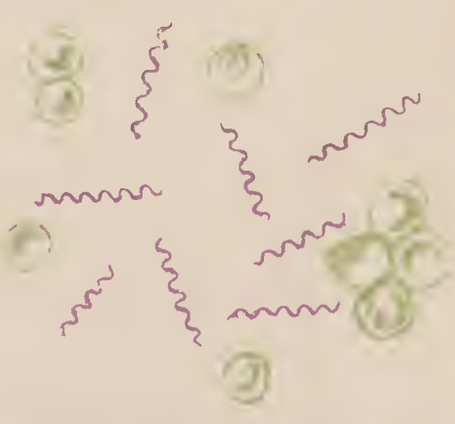

Fig 6.—Spirillum Obermeyeri (after KLEIN).

FALCONER,] [DUBLIN.

Lotion - -	Boric acid, 1 part; hot water, 20; tincture of litmus, ʒj. — Oj.
Ointment - -	Boric acid, 3; vaselin, 10; paraffin, 5.
Vaselin - -	Boric acid, 5 to 10 per cent., and vaselin.
Wool - - -	Boric acid, 50 per cent., and absorbent wool.

Carbolic Acid.

Cream - -	Unguentum acidi carbolici, ʒj.; ol. creasoti, ♏.x.; vaselini, ʒij.; ol. lini, ʒiij.
Gauze - - -	Carbolic acid, 1; resin, 4; paraffin, 4.
Glycerine - -	Carbolic acid, 1; glycerine, 10.
Lotion - -	Carbolic acid and water, 1–20 and 1–40.
Oil - - -	Carbolic acid and olive oil, 1–8 and 1–20.
Ointment - -	Carbolic acid, 1; soft paraffin, 12; hard paraffin, 6.
Cat-gut - -	Carbolic acid, 200 parts, is added to a solution of chromic acid, 1–4000, in distilled water; then cat-gut equal in weight to the carbolic acid is placed in the solution for 48 hours, and stretched until dry, when it is placed in carbolic oil, 1–5, until required for use.
Silk - - -	The silk is soaked for some minutes in a solution of carbolic acid, 1 part, and yellow wax, 9 parts, and then removed for use.
Wool - - -	Carbolic acid, 6 per cent., and absorbent wool.

Salicylic Acid.

Cream - - -	Salicylic acid, 2; carbolic acid, 1; glycerine, 10.
Lotion - - -	Salicylic acid, 1; water, 300.
Ointment - -	Salicylic acid, 1; soft paraffin, 18; hard paraffin, 9.
Wool - - -	Salicylic acid, 4 per cent.; glycerine, 4 per cent.; and cotton wool.

Eucalyptus.

Gauze - - -	Oil of eucalyptus, 1; dammar, 3; paraffin, 3.
Ointment - -	Oil of eucalyptus, 1; soft paraffin, 2; hard paraffin, 2.

Iodoform.

Gauze - - -	The gauze is soaked in an ethereal solution of iodoform, and contains, when dry, about 20 per cent. of iodoform.
Wool - - -	Same as above, but the wool should contain 10 per cent. of iodoform.
Iodo-vaselin -	Iodoform, gr. 60; oil of eucalyptus, ℥i.; heat until the iodoform is dissolved, and add vaselin, ℥v.

Perchloride of Mercury—Corrosive Sublimate.

Gauze (Sal Alembroth)	Perchloride of mercury, ℥i.; ammonium chloride, ℥i.; glycerine, ℥ij.; rub up in a mortar, and then mix with 4 gallons of water; add to this solution sufficient aniline blue to give required colour, then thoroughly soak the gauze in the solution, in which it should be allowed to remain for 12 hours; then take it out and dry before a fire, but do *not* wring it.
Lotion - -	Perchloride of mercury, ℥j.; glycerine, ℥iss.; ℥i. of this solution in O iv. of water = 1 in 1000.
Cat-gut - -	Place the cat-gut for 12 hours in a 1 per cent. watery solution, and then keep until required in $\frac{1}{2}$ per cent. alcoholic solution containing 10 per cent. glycerine.
Silk - - -	Place the silk in $\frac{1}{10}$ per cent. watery solution for 24 hours, then in $\frac{1}{5}$ per cent. alcoholic solution for same period, after which dry and keep in powdered carbonate of bismuth, containing $\frac{1}{10}$ per cent. corrosive sublimate.
Wood wool and wood wool cotton	Wood wool impregnated with corrosive sublimate, $\frac{1}{2}$ per cent. solution, and glycerine 5 per cent. Peat may be prepared in the same manner as the wood wool, but requires to be moist when applied.

Chloride of Zinc.

Lotion - - -	Chloride of zinc, gr. xx.; water, ℥i.

Table of Solubilities.

One part of	is soluble in — parts of				
	Cold water	Hot water	Rectified spirit	Glycerine	Ether
Boric Acid - -	26	3	22	5	—
Carbolic Acid - -	20	—	$\frac{1}{5}$	1	$\frac{1}{4}$
Salicylic Acid - -	760	—	4	200	2
Iodoform - - -	13000	—	80	—	10
Corrosive Sublimate -	16	3	$3\frac{1}{2}$	14	4

Table of Minimal Strength in Watery Solutions at which Antiseptics are reliable.

Perchloride of mercury - -	1 in 1425
Sulphate of copper - - -	1 „ 110
Chloride of zinc - - -	1 „ 52
Carbolic acid - - - -	1 „ 31
Permanganate of potassium -	1 „ 28
Alum - - - - -	1 „ 22
Boric acid - - - -	1 „ 13
Salicylate of sodium - -	1 „ 10

Table of Absorbing Power of Antiseptic Media.

Media	Absorbs — times its weight of water.
Absorbent wool - - -	15
Moss-turf - - - -	$8\frac{1}{2}$
Wood wool - - - -	$8\frac{1}{4}$
Gauze - - - -	$5\frac{1}{2}$
Jute - - - - -	5
Sawdust - - -	4

ART. III.—*On the Toxicity of Silicon Fluoride.* By SIR CHARLES A. CAMERON, M.D.; S.Sc.C. Camb. Univ.; M.K.Q.C.P.; ex-President and Professor of Hygiene and Chemistry, R.C.S.I.; Examiner in Sanitary Science in the University of Cambridge and the Royal University of Ireland, &c.

IN 1882 a man employed in an artificial manure works situated in Mill-street, Dublin, died after a few hours' illness. An inquest was held upon his remains, at which the following facts were deposed to:—1st. That on the morning of the day upon which he died the deceased was in his usual health; 2nd. That immediately after going into a small chamber termed the "den," in which was contained a quantity of freshly prepared superphosphate of lime, he became unwell and went to his home; 3rd. That he complained of difficulty in breathing, and, after much suffering, died in the evening; 4th. That no poison was found in his viscera. The jury found a verdict to the effect that the deceased had died from inhaling "foul and poisonous gases."

On the 26th of October, 1883, a young man named John Murphy, employed in this manure factory, died after a few hours' illness. In this case, too, there was an inquest, and the verdict of the jury was that "John Murphy died from inhaling foul gases."

John Murphy entered the factory for the first time on the morning of the day upon which he died. He was employed in "mixing manure." At 9 o'clock he came home to breakfast. His sister remarked that he had a muffler round his mouth, from which it may be inferred that he had been protecting his lungs from some irritant gas, vapour, or dust. He returned to the factory at 10 o'clock, but an hour later came home, and said that he was "smothering," and lay down on his bed. Soon after he "threw up froth and other matters," his sister said, and he cried out constantly for air. A neighbour who saw him at half-past 1 o'clock testified that his nose, cheeks, hands, and feet were purple; his head, but not his body, was cold; he was "gasping for air," breathed with difficulty, and insisted on having the back of his neck and chest uncovered. About half-past 7 o'clock p.m. the police removed him to Dr. Steevens' Hospital, where he expired a few minutes after his admission, remaining conscious up to his death. He informed Dr. Myles, resident surgeon, that he had been drinking very hard, but not during the previous week. He said that he had been working in a chemical manure factory, and

that he was "choking." His breathing was very hurried and he spoke with difficulty.

The viscera of John Murphy were submitted to me for examination. No poison was detected in the stomach, liver, or kidneys. The lungs were somewhat œdematous, and in several parts presented the appearance to which Niemeyer has applied the term of "permanent inspiratory vesicular ectasia." The pulmonic veins were greatly congested and the pulmonic capillaries distended. The blood was very dark, and the bronchi were plugged with frothy mucus. The right cavities of the heart were distended with clotted blood, whilst the left cavities were nearly empty. There was hæmorrhagic infiltration of the cardiac muscles; heart otherwise healthy. The liver was congested, a portion of it presenting the "nutmeg" appearance sometimes met with in the case of intemperate persons. With the exception of some slight adhesions between the costal and visceral pleuræ, and some other evidence of former pulmonary disease of no serious character, the "nutmeg" liver was the only abnormality revealed by the examination. The symptoms in this case and the condition of the lungs and heart shown by the *post mortem* examination indicated death by asphyxia.

In the manufacture of artificial manures carbonic acid is evolved, often in large quantities. Now, if the deceased had inspired sufficient carbonic acid to kill him, he would have been either at once rendered insensible or nearly so. Persons who having inhaled carbonic acid are able to walk into a pure atmosphere usually recover, after breathing pure air for some time. Murphy was able to walk home, but, instead of improving by the change of air, his symptoms became more and more urgent. There was no evidence given at the inquest showing whether or not he had entered the "den;" but, being a stranger in the works, and in all probability unaware of the deadly nature of the air in that chamber, he probably did enter it. On thinking over the case of John Murphy, I came to the conclusion that he had been killed by inhaling fluoride of silicon gas, and I immediately proceeded to put my theory to such proofs as the case admitted of.

Presence of Fluorine and Silicon in the Lungs of the Deceased.—When fluoride of silicon comes in contact with moisture, silicic and fluosilic acids are, as is well known, formed in accordance with the following reaction—$3\,SiF_4 + 4\,H_2O = 2\,(SiF_4, 2\,HF) + H_4\,SiO_4$.

If the deceased had inspired silicon fluoride, silicon should be present in his respiratory organs, and fluorine might also be found therein. An analysis of a portion of the lungs showed that the whole organ contained at least 0·75 gramme of silica ($Si O_2$). Minute quantities of silica have been found in the bones, and perhaps in other parts of man, but the quantity present in the lungs of John Murphy was so very large as to preclude the possibility of its being a normal constituent of the organ. About 20 grammes of the lungs and bronchi were treated with a little potash to convert any fluosilicic acid which it might contain into a salt. About 50 grammes of the lungs were soaked in water, and subjected to pressure; the expressed liquid was added to the 20 grammes of lung. The mixture was then dried, treated with half of its weight of concentrated sulphuric acid, placed between two watch glasses, and heated for several hours. On washing the watch glasses they were found to be slightly dulled here and there on their inner surface. As portions of the lungs of other subjects treated similarly produced no erosion on watch glasses, it was inferred that fluorine was present in the lungs of John Murphy. As no dust was noted in the trachea of the deceased, the silicon and fluorine could not have been inhaled in the form of powdered coprolite or other phosphate.

The Manufacture of Superphosphate at Mill-street Factory.—In this factory various kinds of phosphates, reduced to powder, are placed in a close vessel or "mixer" and sulphuric acid let down upon them from a tank through a kind of hopper. The solid and liquid are mixed by means of a spindle provided with blades placed at right angles. During the operation, the carbon dioxide, oxides of nitrogen, fluoric acid, and fluoride of silicon evolved are, by means of a fan, forced through a long flue into a chimney, and during their passage are almost altogether reduced from their gaseous state by means of jets of cold water. When the mixture is complete a lever opens the bottom of the mixer, and the superphosphate falls into a chamber technically termed the "den." In this chamber gases continue for some time to be evolved from the superphosphate, consequently it also has to be brought into connection with the ventilating flue and chimney. Should anything go wrong with the fan or the machinery from which its motion is derived, then the ventilation of the mixer and den would be arrested and offensive gases would escape from them into the space occupied

by the workmen. It was admitted to me that on more occasions than one the fan had been temporarily rendered inoperative. It is open to any workman to enter the den should he think fit, and the man who died in 1882, to whom reference has been made, did so, and immediately became unwell. I have little doubt but that John Murphy met his death by entering the den before the deleterious gases in it had been fully drawn off.

Peculiar Nature of the Phosphate used in the Works.—I procured a specimen of the phosphatic material used in the factory at the time of Murphy's death. It was of the kind termed "Charleston Phosphate," and its composition was as follows:—

100 parts contained—	
Water and organic matter - -	8·00
Calcium phosphate - - - -	57·25
Calcium carbonate - - - -	14·45
Calcium fluoride - - - -	6·36
Alumina and ferric oxide - - -	6·44
Silica and insoluble silicates - -	7·50
	100·00

The amount of fluoride of calcium in this phosphate was unusually large. On treatment with acid it would evolve very large amounts of carbon dioxide, and fluorine compounds. One ton of this phosphate, if treated with a sufficient quantity of acid, would yield 91·616 lbs. of silicon fluoride,[a] occupying 8·918 cubic metres, or 315 cubic feet. It would also yield 142 lbs. of carbon dioxide, occupying 32·78 cubic metres, or 1,158 cubic feet.

In converting this Charleston phosphate into artificial manure, more carbon dioxide would be evolved than silicon fluoride, but as the carbon dioxide diffuses more rapidly than silicon fluoride in the ratio of 1·54 : 1, or about as 3 to 2, the proportion of the silicon fluoride in the den would increase relatively to that of the other gas. As several tons of the phosphate were operated upon on "mixing days," the deleterious gases evolved would amount to several thousand cubic feet; hence the importance of providing for the proper ventilation of the mixer and den—and, indeed, of the whole factory.

That John Murphy died from asphyxia, caused by inhaling dele-

[a] Probably some of the fluorine would be evolved as fluoric acid (HF), and some of the silicon fluoride would be decomposed by the moist air of the place.

terious gases or vapour, is beyond doubt; and it seems to me equally certain that these gases were oxides of nitrogen, carbon dioxide, and silicon fluoride. To what extent the two former contributed to the fatal result I know not, but I have little doubt that the silicon fluoride was the principal, if not the sole, cause.

Action of Silicon Fluoride on the Respiratory Organs.—When silicon fluoride comes in contact with the moist surface of the respiratory passages, it deposits thereon gelatinous silica and fluosilicic acid. The silica being in the colloidal state, opposes great resistance to the passage of gases, and it forms a glaze, or varnish, on the walls of the bronchi and their ramifications. As it is not absorbable into the circulation, it can only be got rid of by expectoration. It probably acts as an irritant to the nerves of the smaller bronchi, causing their musles to contract spasmodically, thereby diminishing the area of the passages between the trachea and the air vesicles. The plugging of the smaller bronchi with the colloid silica undoubtedly impedes to a large extent the access of air to the lungs. The fluosilicic acid, no doubt, contributes to the toxic effect produced by inspiring silicon fluoride. Being readily soluble, it is highly probable that it passes into the circulation and acts as a nerve poison. It may act directly upon the filaments of the pneumogastric nerve, which come in contact with it, and paralyse their action.

Effects of Silicon Fluoride on Animals.—Into a glass vessel of 47 litres' capacity 0·47 litre of silicon fluoride was introduced, and when it was concluded that the atmospheric air and fluoride of silicon were equably mixed, a rat was introduced into the vessel, which was immediately closed. Owing to the air in the vessel being imperfectly dried, much of the silicon fluoride was at once decomposed, and it is probable that the air inspired by the rat did not contain quite a half per cent. of the fluoride. The animal sat up, rubbed its nose with its fore feet, and made attempts to escape. Its breathing was very rapid. The deposit of silica upon the interior surface of the vessel soon obscured the animal's movements. After 20 minutes' exposure to the atmosphere of the vessel the animal was removed. It was then quite passive; but its heart beat rapidly, though feebly, and its respiration was hurried, and occasionally there were spasms of the muscles of the limbs, especially of the flexors. It survived four hours.

The glass vessel having been filled with perfectly desiccated air, the latter was mixed with 0·5 per cent. of its volume of silicon fluoride, and a healthy guinea-pig, weighing 1 lb. 1 oz., was introduced into the gaseous mixture. It immediately exhibited signs of irritation, scratching its nose and shaking its head. The film of silica which formed upon the moist surface of the eyes caused the animal to close them, but it occasionally opened them to examine its surroundings. After five minutes it made a few feeble attempts to scale the side of the vessel; it staggered about, and could not maintain itself straight upon its legs. After 10 minutes it lay upon its abdomen. At the expiration of 15 minutes the animal was taken out of the vessel. Its respirations were shallow, and its heart fluttered rather than beat. Loud murmurs were heard in that organ, and the bronchial râles indicated the presence of much mucus in the bronchi. On being turned upon its back it regained its former position—lying upon its abdomen. Twelve minutes after removal from the vessel it lay in any position in which it was placed, and three minutes later it expired.

A strong guinea-pig, weighing 2 lb. 1 oz., was placed in a mixture of 98 parts of air and 2 parts of silicon fluoride. The animal instantly exhibited signs of irritation, and struggled to escape from the vessel; but its efforts soon became feeble, and ceased completely within four minutes. One minute later the animal appeared to be dead; and on removing it from the vessel no cardiac movements could be detected.

An examination of the respiratory organs of the animals that had been killed by the silicon fluoride showed that the respiratory passages down to and including some of the air vesicles in the lungs were coated and some of them plugged with colloid silica. The lungs were dark in colour and highly congested, and there were blood clots in the right cavities of the heart.

The foregoing experiments prove that fluoride of silicon is a more powerful poison than carbonic acid, or even carbon monoxide. They do not, however, show precisely the action of the poison. It undoubtedly causes (like carbonic acid) imperfect arterialisation of the blood, and distension of the right side of the heart. It does not, however, when inspired in fatal doses, appear always to produce insensibility, as carbonic acid does. It is probable that its action is more complex than that of carbonic acid. The silicious glaze and plugs already referred to induce a certain amount of asphyxia by narrowing the respiratory passages, and the fluosilicic acid

may act as a poison to the nerve centres which control respiration. It is remarkable that John Murphy was conscious up to the moment of his death. It is clear, then, that his psychical nerve cells were affected neither by the poison nor by the alteration in the composition of the blood caused by the poison. In John Murphy's case, perhaps, the fluosilicic acid acted on the inhibitory ganglionic centres in the walls of the heart, already embarrassed by the impure condition of its blood from deficient aeration; in such a case the immediate cause of death would be failure of the heart's action, the patient retaining consciousness until the last. The point is worth consideration. In the number of the *Dublin Journal of Medical Science* for February, 1870, I published a remarkable case of poisoning by chlorine gas, in which I found that the poison was carried by the circulation into the brain, and that it killed by causing asphyxia. Professor Binz, of Bonn, confirmed [a] and extended my observations. I hope Professor Binz or some other physiologist may be induced to study the physiological action of silicon fluoride on the animal system, for I have done little more than prove its remarkable toxicity.

In conclusion, I have to express my indebtedness to my colleague, Professor A. Frazer, for supplying me with the animals experimented upon, and his kind assistance whilst determining the toxic effect of silicon fluoride upon two of them.

[a] *The Anæsthetic Action of Chlorine.*—Ten years ago Cameron published a singular case of a sailor who died comatose after having slept in a cabin containing a quantity of chloride of lime. In the *post mortem* it was noticed that a strong odour of chlorine was exhaled from the ventricles of the brain when they were opened, although the autopsy was made thirty hours after death. Binz has recently observed a similar effect in the case of rabbits, and his researches show that chlorine, bromine, and iodine, when inhaled, paralyse the nerve centres, apparently by a direct action on the protoplasm of the nerve cells, and cause death by cessation of the respiration, not of the heart. It used to be taught that chlorine when inhaled is quickly transformed into chloride of sodium by combining with the alkali of the blood. It seems, however, that, as Cameron's case teaches, the chlorine may remain for a long time in contact with the lymph and blood without undergoing this transformation."—*The Lancet*, April 16, 1881.

ART. IV.—*The Present Position and Prospects of the Domain of Therapeutics, with a Glance at its Relations to the Neighbouring Sciences.*[a] By WILLIAM WHITLA, M.D., Physician to the Royal Hospital, and Consulting Physician to the Ulster Hospital for Women and Children; President of the Ulster Medical Society; Vice-President N. I. Branch British Medical Association; Fellow of the London Medical Society; Fellow of the Royal Medico-Chirurgical Society of London, &c.; Author of "Manual on Materia Medica and Therapeutics;" Examiner in Botany and Materia Medica for the Pharmaceutical Society of Ireland; Member of the Senate of the Royal University, &c.

GENTLEMEN,—My first duty is to express to you my appreciation of the honour you have conferred upon me in electing me to the Presidential Chair of the Ulster Medical Society.

It occurred to me that I could with advantage occupy your attention for a brief period, in which we might look back at what has been recently taking place in some departments of the great field of medicine.

That branch of medical science which has for its aim the treatment and cure of disease possesses, I think, the most interest to the majority of the members of our profession, and if you permit me to crave your indulgence I shall attempt to take a rapid survey of the present position and prospects of the domain of therapeutics, and glance at its relations to some of the neighbouring departments.

We constantly hear expressions of opinion about want of progress in this branch of medicine, and it appears to be fashionable in some quarters to lament that whilst pathology, bacteriology, physiology, gynæcology, and every other "ology" is progressing with rapid strides, the treatment of disease remains pretty much in the same position as it did a quarter of a century ago. It appears to me a suitable opportunity to look into this question for ourselves, and see, if this be true, how far it may be in our power to remedy it; and if it be untrue to expose the fallacy.

To the hospital physician, as well as to the busy practitioner, the term therapeutics too often means that vague and somewhat shadowy land where the contradictory results of experiments upon the lower animals are hopelessly blended with opposing theories and fruitless applications of the resulting fallacies to the treatment of diseases in

[a] Being the Presidential Address delivered before the Ulster Medical Society, December, 1886.

mankind. Much difficulty will be at once removed if we clearly recognise that there are *at least* two distinct sciences included in the ordinary conception of the term therapeutics. For, in addition to the "treatment of disease" there is the science of pharmacology—the science of the action of remedies apart altogether from disease; a study of the effects produced by remedial agents upon healthy or normal physiological conditions. Though this department of experimental medicine may still be regarded as in its infancy, it is making enormous strides. Called into existence by the creative genius of Magendie, during the lifetime of some of my present auditors, it has developed under difficulties sufficient to strangle the growth and progress of any other branch of science.

Opposed in our own country by the morbid sentimentality and wicked ignorance of hysterical agitators, and obstructed by the restrictions of a shortsighted Legislature, still pharmacology has continued to enrich therapeutics and alleviate human suffering—rearing a lasting memorial, in the face of unparalleled obstacles, to the truly scientific and self-sacrificing spirit of practical medicine.

Whilst the successful treatment of disease must always look for aid and guidance from the results obtained by the experimental methods of research employed in pharmacology, at present the application of still unperfected results is one of the dangers which the practical physician has ever to be on the look-out for. It is the ill-judged and hasty utilisation of such pharmacological results which, perhaps more than anything else, has tended to throw doubt upon the progress made in therapeutics. As we really look beneath the surface the unprejudiced observer must see that the solid foundations of a scientific treatment of disease are being surely and permanently laid. Encompassed about with clouds of witnesses, I need at this stage in passing only refer to the researches of Brunton upon the action of the nitrites, of Frazer and Crum Brown upon strychnine, of our Continental brethren who have been investigating the actions of the chinolin series and the mydriatic alkaloids, of Matthew Hay, who has recently demonstrated the action of the saline group of cathartics, and to the results which every month teem in upon us from the happy pastures where the anti-vivisection mania has not retarded the triumphant sweep of scientific research. It is true that these valuable results are not immediately revolutionising the treatment of disease, but it is certain that in two directions we are gaining ground. Firstly, in the introduction of new remedies

of great value and power; and, secondly, in the use of the older remedial agents with far greater precision and effect.

The other departments of medicine are adding their share in our advance, and if we look towards chemistry the results are almost startling. It is only within a very recent period that the intimate connection and relationship between physiological action and chemical constitution has been at all recognised, and it was, I believe, the not taking a roseate view of our situation which led Lauder Brunton, a few months ago, to declare that having passed through the flint, stone, and bronze ages, we are just now entering into the iron age of therapeutics.

The science of chemistry has contributed to this in no small degree, and the rapid working out of the principles upon which physiological action and chemical constitution are related to each other have already achieved results which but a few years ago would have been regarded as fabulous. We cannot surely be standing still when the pharmacologist can predict with almost unerring certainty that once the chemist can succeed in producing certain readjustments of the molecular particles of various carbon bodies, he will, with the resulting new compound, produce certain definite and novel physiological or therapeutical effects. To my mind there have been few advances in the whole range of science which during recent years can compare with this. Yet this prediction has been made, and is being constantly fulfilled, and every few months we are having antipyretic remedies created and placed in the hands of the physician, by which he can reduce fever heat with almost as great certainty and precision as the engineer can reduce the pressure of the steam upon his safety-valve.

The humble science of pharmacy has done much to help therapeutics, and it would be difficult to over-estimate the enormous advantage which the practical physician experiences daily in using the active principles of drugs instead of the crude vegetable decoctions of twenty years ago. Had we no other evidence of progress than even this, one could hardly say we were standing still. The alkaloids, isolated during the past few years, have furnished a new series of excellent and precise weapons which the scientific therapeutist can wield with a uniformity of result and certainty of action undreamt of by our fathers. The synthetical preparation of various rare and expensive principles by the pharmaceutical chemist, marks an era in our progress which is deserving of record, and, as I speak, come the tidings that one

cherished hope of the pharmacist has been realised, and that quinine has been successfully produced by artificial means.

To the practical pharmacist the physician is deeply indebted, and I fear we do not sufficiently recognise the invaluable labours of men who are ceaselessly toiling on and laying at our feet the richest remedial agents extracted from the great laboratory of nature. There is a development of modern pharmacy, however, which, far from being an advance, is decidedly, in my opinion, calculated to retard the progress of the healing art—I refer to the practice of huge American and English drug houses who are flooding this country with ready-made remedies, and cut and dry formulæ for every ache and symptom to which flesh is heir. This practice threatens to either exterminate our faithful ally, the scientific pharmacist, or convert him into a mere bottle-filling machine.

At this juncture we might refer to an event of some importance—I refer to the advent of the new pharmacopœia. When we wish to get a correct idea of the condition of the healing art, in any remote age, there are, perhaps, few more reliable methods than to study the pharmacopœia, or list of remedial agents in use during the time. Let us for a moment apply this test to our own day. Is the recent volume evidence of progress or decay? I find myself here in a difficulty. Dr. Quain, upon whom the great burden of the work has fallen, has by his great ability and indefatigable labour earned the lasting gratitude of the entire profession, and I believe no one man, of the present or past age, could have more successfully carried through the great undertaking. But we cannot accept the new work as an index of the progress made in therapeutics since the last issue, either judged by the number of worthless remedies still retained, or by the number of agents of undisputed merit omitted. Nevertheless, to the most casual observer the work abounds with conclusive evidences of solid progress, though it can never hope to be a true indication of the therapeutics of the day until the Medical Council avail themselves of the aid of practical therapeutists, whose duty it should be to send forward reports at short stated periods.

With this digression, we will leave the subject of pharmacy and glance at the relations of pathology to the science of therapeutics. It would be unfair to ignore the aid rendered by this science to the healing art. The President of one of the sections of the British Medical Association meeting, last August, declared that one of his predecessors in the chair had rightly said, "pathology is the basis

of every rational system of therapeutics." Allowing to pathology every credit, we might glance critically at some of the ways in which she has aided her offspring. The aid appears to have been more of the destructive than of the constructive kind, but it was, nevertheless, valuable. Once the naked eye or microscope demonstrated the grosser forms of pathological lesions, causing many of the well-recognised diseases, the death-knell of long-vaunted specifics was rung out, and a healthy scepticism was fostered. Looking down the tube of the microscope, for example, at the changes in the nerve cells of the posterior columns of the cord of an ataxic patient, the first reflection of the pathologist doubtless often was, "How useless, arsenic, silver, or iodides!—remedies *cannot* touch a lesion like this." As the various structural or organic affections were, one after another, demonstrated to be associated with grave and profound pathological changes, this feeling of unbelief in the older lines of treatment gradually gained ground, and a deeper longing filled the breast of the physician for a less empiric and a more rational system of treatment. I have no doubt that the change was one which benefited the department of therapeutics considerably. Like every other reaction, however, this one also went too far, and the spirit of scepticism became a barrier to progress—men refused to believe that remedies could produce results which, in their ignorance, they could not understand the *modus operandi* of, unless the effects were very striking and unmistakable. The new discoveries in the pathological field became more fascinating as the science gained more in exactness and the domain of treatment was comparatively neglected in the hospitals and medical schools. I have been often astonished at the brilliant and interesting clinics in the Metropolitan Hospitals, where the physician, after a long and elaborate account of the history, symptomatology, diagnosis, and pathology of a case, wound up his remarks sometimes without even a word upon the treatment, or more frequently in a single sentence, deploring his inability to satisfy himself about the utility of the usual remedies in the case before him. Young medical men leave the schools often without the faintest idea even of dosage, and innocent sometimes of any practical knowledge of the therapeutic action of the most valuable and reliable remedies. Contrasting these men with the older practitioners of half a century ago as regards their success in treatment during the first half dozen years of their practice, one might be tempted to conclude that not only was the science of therapeutics not progressing, but that it was fast retrograding.

Going round the wards with one of the most learned and distinguished physicians of a great Metropolitan Hospital, a few years ago, we came to a little patient suffering from chorea. He said to me, "How do you treat your cases of this disease in Ireland?" My reply was, "With arsenic;" and he asked, "Do you really believe in it?" "Undoubtedly we do." He said, "From what I know and have seen of the pathology of chorea I did not believe that arsenic could be of the slightest use to it; nevertheless, I determined to prove it, and I have demonstrated the fallacy which some men still cling to. I treated so many cases of chorea with teaspoonful doses of aqua camphoræ, and a similar series with arsenic, and the results were precisely similar. My large class of students have taken a deep interest in the experiment, and you can ask any of them do they believe in arsenic now." Upon inquiry I satisfied myself that the doses of Fowler's solution administered were so small that any practical therapeutist could have foretold with certainty the result of his protracted series of experiments. It is placed beyond doubt that choreic children can tolerate enormous doses of arsenic, and that in chronic cases this drug may be given in quantity ten times greater than are necessary to produce the ordinary tonic effects of the drug, and always with telling results. Under almost similar circumstances I was confronted by a distinguished pathologist who, after trying iodide of potassium in tertiary syphilis for some years, was convinced that it was of little value. I have since carefully examined several broad and sweeping statements of a similar class, and have generally satisfied myself that much of the scepticism about many of our oldest and most trusted remedial agents has arisen from ignorance of the elementary knowledge of their doses, and methods of administration. I have thought it advisable to refer to this aspect of the subject, because I believe it is, to a great extent, the explanation of the unfavourable opinion of the progress of therapeutics held by some of the most distinguished and scientific members of our teaching bodies. It is, however, better, upon the whole, for our science that scepticism should take the place of the blind faith that existed in past days—a faith in heroic doses and in a meddlesome polypharmacy which characterised the stone age of therapeutics.

We must not for a moment base our estimate of the progress we are making by the extent or quality of the knowledge imparted in some of the medical schools, or attach much weight to what may be the prevailing fashion in a few places of affecting a disbelief which

is too often grounded upon want of knowledge or a half-consciousness of ignorance.

Such a condition of matters is not evidence that therapeutics is standing still, but strongly suggests to us the serious possibility that men in their anxious search after new and more fascinating truths, and in their eager desire to keep abreast of the ever-streaming tide of discovery, may find themselves losing hold of some of the anchors forged by their predecessors after centuries of laborious observation and patient toil.

The *direct* advantages which accrue from a knowledge of pathology to the scientific therapeutist are too obvious for me to dwell upon, though I think they are often overrated. The late Dr. Moxon, himself a brilliant pathologist, in speaking to a class at Guy's upon the value of a knowledge of pathology, said he thought the pathology of the Pathological Society and of the *post-mortem* room afforded little help in the treatment of disease, except perhaps to give the physician confidence in himself. Thus he said :— "Pathology gives you a way of knowing what is happening and going to happen in your patient; and the public expects that of you. I shall take leave to pity you much if you do not get a good knowledge of such pathology, otherwise you will be ignorant and unstable; and if you have any conscience you will be full of fears that others better informed than yourself would conduct the patient's case better than you are doing. So you will take your unmerited fees in a properly nervous perspiration, suspecting all the while that the patient's aunt is strongly recommending Mr. Johnston. It is for your own good that you learn pathology, so that you may have sound knowledge to rely upon when rivalry outside and weakness within shall shake your nerves. Here is the difference then—pathology serves to give confidence in yourself, therapeutics serves to cure your patients, and you will find that is what your patients want." These remarks evidently apply to the individual more than to the science, as there can be no doubt that every genuine advance made in the science of pathology must ultimately benefit therapeutics. Still there is in them the foreshadowing of the great truth that the newer additions to medicine have rather tended to make men neglect the close and patient study of the immediate and remote effects of remedies used in disease in the same thorough and careful way in which our fathers did.

Physiology has in its onward march very materially helped the science of treating disease, and indeed the investigations of phar-

macologists have often been of service to the physiologist, both sciences being so closely linked together.

Did time permit us to closely examine the advances made in pharmacology, pathology, chemistry, pharmacy, and physiology, we would, without further evidence, be driven to the conclusion that, *nolens volens*, the therapeutist must be advancing.

A department like therapeutics, which is based upon all these sciences, *cannot* stand still. Should it once attempt to halt, like the tired or unwilling horse in the team, it would be lifted off its feet and swept on by its vigorous and ambitious companions in their swift race to reach the golden goal of truth.

Let us look for a moment at the RESULTS of therapeutic progress. We have said that at least in two directions the evidence is clear. Our old remedies are used with greater precision, and we have a vast array of new remedial agents of unquestioned value.

The *truth* of our first statement is so obvious as scarcely to require proof, and my only difficulty is in selecting an example out of the innumerable host which appears before me. Two of our commonest drugs suggest themselves — digitalis and mercury. When I first commenced the study of medicine I remember well my introduction to foxglove, which even at that recent period was regarded as a narcotic, and its virtues were impressed upon me with all the dogma of authority, especially its great power as a cardiac *sedative*. I was informed and taught that it would subdue a Hercules, and was of great value in weakening the pulse and soothing the heart when it was acting too strongly, but that it was dangerous, and should not be used when the pulse was weak and irregular. We now understand its action, and employ this drug daily as a cardiac tonic in imperfect compensation, watching its influence upon the cardiac ganglia, measuring its effect upon the lengthening of the diastolic pause, and observing how the wearied cardiac muscle gains new life and vigour by the increased coronary nourishment administered during the prolonged diastole. Though often we may be puzzled and disappointed, owing to the many complex disturbing influences at work, still constantly we shall find cases in which we can use this tried and faithful weapon with an accuracy approaching the mathematical. In the case of mercury, we might spend much time portraying the evils of the older methods of use in which profuse and sometimes fatal salivation followed the administration of the drug in heroic and long-continued doses. The physician now rarely, if ever, salivates, and by close

observation weighs the amount of the metal required to act as an antidote to the vital poison of syphilis, and by patient watching and close observation adjusts the balance sometimes with as near approach to complete success as crowns the efforts of the chemist in neutralising his solutions in the laboratory. Not only has the wild and culpable dosing by large quantities of mercury been long since abandoned, but, in our approach to accuracy, the infamy and discredit into which the drug had more recently fallen, are rapidly passing off, and we recognise its virtues and know its reputation to be now above the danger of future detractions by our descendants, as they are already beyond the extravagant praises of our ancestors. If anyone should still doubt that our methods of using this venerable remedy are incomparably superior to those employed even a few years ago, let him reflect upon the revolution which dilute solutions of the bichloride has wrought in obstetric practice, and how (as pointed out last week in an able address of one of our members) hundreds of lives are annually saved in the lying-in hospitals of the Continent by the judicious use of this fatal enemy of every member of the germ world.

By examining the methods in which we *now* administer the antiphlogistic, cathartic, diuretic, or expectorant remedies in use fifty years ago, we might easily satisfy ourselves that our progress was rapid and certain, even if we did not possess *one new* remedy of acknowledged power.

This brings us to the consideration of the difficult subject of New Remedies—a question requiring for its proper treatment a far more matured experience than mine; and in attempting to deal with it I must crave your indulgence whilst we consider—"Is the enormous number of new remedies evidence of progress or decay in therapeutics?" My experience is too short and my reading too limited to compare accurately our position in this respect with what it was at any given period during the last hundred years; but I believe that at no time during this century had the profession ever such an array of comparatively new and untried remedies placed before them.

It is interesting and encouraging to find that the multiplicity of remedies has always been regarded with suspicion and often with disfavour by the scientific physician, even in the stone and bronze ages of therapeutics. Thus Dr. Paris, writing fifty years ago about the remedies in use in his day, says:—"It has been very justly observed that there is a certain maturity of the human mind

acquired from generation to generation, *in the mass*, as there is in the different stages of life in the *individual* man. What is history, when thus philosophically studied, but the faithful record of this progress, pointing out for instruction the various causes which have accelerated, retarded, or obstructed it in different ages and countries? Thus is our art, in its earlier periods, like the young and sanguine practitioner, characterised by an excess of credulity—every object is tinted with imaginative hues and magnified in the mist of dawn; we find, for instance, the early herbals assigning almost incredulous virtues to every herb of the field, while in the present day the list of those which are admitted to possess any real efficacy is reduced to the limit of a few slender pages. Just so is it with the career of the individual. 'When I was young,' said Dr. Radcliffe, 'I possessed at least twenty remedies for every disease, but when advanced in age I found twenty diseases without a remedy;' or, in other words, his imagination had been tempered by reason and his early credulity subdued by long experience. The mirror of history casts its lights as well as its shadows. It discovers fallacies that may mortify our untaught conceit, but it as surely displays truths which must gratify our pride, inspire our hopes, and give a keener edge to our exertions."

This truly scientific simile puts the host of new remedies in a fair light, and their number is suggestive of the infancy of therapeutics. If the venerable author of the Pharmacologia was to appear upon the scene to-night, I fear he would conclude, after glancing at the array of specimens before us, that we were fast entering upon our *second* childhood. But the case is not so bad as at first sight appears; and if we examine it more closely we will be able to satisfy ourselves that the present condition of current medical literature and the high pressure of professional life have to answer for many of the new remedies.

Nowadays a man, perhaps upon the result of a single fallacious observation, thinks he has discovered a specific, and without patiently waiting, as his fathers would have done, and verified his observation by repeated trials, he rushes into the weekly medical journal—whose pages are always at his command—burning to give his discovery to the world, and his own name along with it. This has, however, one advantage—his statements are put to the test by scores or perhaps hundreds of medical men over the world, and the life of the new remedy and his own fame wither in an hour. It is, however, sad to reflect how much ingenuity and labour it requires

to disprove one of these random puffs. Our process of sifting is much more rapid and severe than in former days, and if a new drug survives a year there is a fair chance that there is something in it. The vast majority of these ephemeral specifics are from the vegetable kingdom, and many hail from the New World, where quite a frenzy for therapeutic discovery has seized upon the great enterprising drug-houses, and men have actually been appointed for the *specific* purpose of hunting up the sickly survivors of old Indian and Mexican tribes, and introducing as potent remedies the weeds and shrubs whose virtues have been handed down for ages among these primitive men in mythic song and barbaric incantation.

This ransacking of the vegetable world has not been without some benefit to the healing art, and the ceaseless activity of the searchers after "cures" has brought unto the therapeutist now and then a diamond surrounded with tons of rubbish. Not only has the botanical kingdom been explored from every point in the compass, but the Russian, whose barren tablelands do not afford much vegetable wealth, has, with a taste less poetical and not so refined, turned his attention to the animal kingdom, and the great scientists of his realm are now in rhapsodies over boiled cock-roaches and blattic acid. No wonder such results and practices have produced in candid minds a pardonable scepticism, or that that portion of the profession which is not given to deep reasoning and profound research should libel the department of therapeutics; but, after all, these are but some of the many evidences which hang upon the flanks of progress.

In the present enlightened age of medicine there is almost greater danger and temptation to the physician to scout *all* the new drugs, than there is for him to fall into the error of regarding them as specifics.

We have all been struck, in watching a clever workman at his labour, in seeing to what an infinite number of purposes he is able to apply some primitive-looking tool, which, by daily handling, has almost become part of himself. He performs with it innumerable feats which it never was intended to be used for, with more rapidity and accuracy than his less skilful fellow with his large assortment of formidable looking utensils. So is it in therapeutics, and it is the experience of every one of us that we can achieve, through long experience, with one of the good old remedies—when we have got to *know our weapon*—results of the most varied and certain kind, unknown and undreamt of by the hunter after newer agents. Thus,

yearly we lessen the number of our drugs as we acquire knowledge and dexterity in the use of them, and this tendency increases as we grow older, and ever will be the solid bulwark which will protect our Materia Medica against the swarming hosts of non-official remedies which threaten to inundate us. This conservative principle may, however, be carried too far, and undoubtedly, with many men, is a barrier to progress. As individuals we should adopt the rule to—

> "Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside."

Disregarding and discountenancing a large percentage of the so-called new drugs, a glance at the remaining list will show us that agents of marvellous power and uniformity of action have been pouring in upon us during the last few years. Measured by any standard we can apply, the discovery and introduction of these remedies are indicative of a progress by leaps and bounds, and not surpassed in any other department of medicine, save in the case of the new-born science of bacteriology.

When I thought of addressing you, it was, at first, my idea of reading some notes on each of the new remedies which I had tried and satisfied myself about; but I think the object will be best attained by asking your attention to the beautiful collection of new and rare drugs which, at my suggestion, Mr. Pring has most liberally and cordially placed before us this evening. The specimens have been selected with great care and skill by Mr. Green, and, I am sure, include some hitherto never exhibited before in Ireland.

The remedies and preparations of undisputed value which have been added to the Pharmacopœia last year number over 100. At least twenty are of primary importance, and are well known and almost universally used. To do justice to these would require a paper written separately upon each one. I shall now simply content myself with an enumeration of them:—

Salicylic Acid, which has in a very short time established itself as a medicine of great efficacy in subduing the pain and fever in acute rheumatism.

Boric Acid, the almost harmless or innocuous antiseptic by which we can disinfect the entire urinary tract with certainty and rapidity.

Apomorphia, which, in addition to its emetic qualities, is the best known expectorant.

Butyl-Chloral, which, in addition to its hypnotic action, specially affects the fifth nerve.

Caffein, introduced for its digitalis-like effects, without the dangers of this drug.

Gelsemium, which is a valuable addition to our anti-neuralgic remedies.

Chrysophanic Acid, which is almost a specific for psoriasis, but which should be given internally.

Cocain, the marvellous local anæsthetic.

Iodoform, whose introduction has revolutionised some steps in operative surgery, but which never should be used along with any other surgical dressing.

Jaborandi and Pilocarpin, by whose intense sudorific action life is often saved in uræmic coma.

Cascara Sagrada, *the* remedy for chronic constipation.

Codeina, nearly the only drug which influences the course of diabetes.

The Oleates, which already (as proved by Dr. Shoemaker) have achieved so much in the treatment of nearly every form of cutaneous inflammation.

Nitro-Glycerine, which, in the hands of Dr. Murrell, in addition to its valuable cardiac and vascular action, promises to be the remedy for sea-sickness.

Vaselin and Paraffin, which, perhaps, with the exception of Glycerine, have been applied to more uses than any other official drug.

Thymol, Menthol, the Sulphocarbolates, and other anti-zymotics.

It is when we come to the list of new remedies not yet included in the Pharmacopœia that one really faces the difficulty of estimating the value of recent accessions to our Materia Medica. The mere enumeration of the names of those which have been generally accepted would weary you; and, if I attempted to give an opinion only of the most highly valued of them, you could hardly fail to think that I was taking an extravagant view of their worth.

Abrus Precatorius (or Jequirity Seed), which, though of very recent introduction as a remedy for various chronic diseases of the conjunctiva, is only recovering from the reaction caused by the too extravagant and enthusiastic report of its wonderful properties.

Osmic Acid is rapidly coming into use as a successful remedy for inveterate epilepsy, sciatica, and neuralgia.

Casca (or Ordeal Bark), Lily of the Valley, Adonis Vernalis, and Mistletoe, by some mystical coincidence beyond the intellect of the therapeutist, have been successfully used in affections of the heart.

Ichthyol, a geological novelty, has already established its value as a remedy in scaly skin affections.

Lycoperdon Giganteum (the puff ball), an old and tried domestic remedy for trivial cuts and lacerations, has been recently re-introduced by Dr. Thompson, and found to possess hæmostatic qualities which place it by a long way at the head of the list of blood-staunching substances. The beautiful specimen upon the table was captured last year in Belvoir Park.

Papain, the new vegetable ferment (prepared by Finkler's method), bids fair to push pepsin out of the field, and, by its power of digesting animal substances, it can be used to disintegrate the false membrane in diphtheria.

Of Coal Tar products, Naphthol, Naphthalin, Fuchsin, and Chinolin have made names for themselves which will not soon be forgotten.

Amongst the host of new antiseptics several have been demonstrated to be of great value for special purposes, as—Boroglyceride, Resorcin, Aseptol (or Sulphocarbol), Terebene, Trichloroacetic Acid, Iodol, and many others.

The therapeutist, in his search for remedies whose uniformity of action and certainty of result could always be counted upon, has introduced active principles, glucosides, and alkaloids of enormous value, and discarded the crude drugs when possible. Thus we have Hyoscyamin, Cotoin and Paracotoin, Pelletierin, Arbutin, Aspidospermin, Helenin, Eserin, Picrotoxin, Agaricin, Emetien, and numerous other active principles of great power and value.

It can hardly be questioned that the new departure of introducing physiological remedies so-called—as Hæmoglobin and albuminates of iron and mercury—has been a step in the right direction. Trypsin, Pancreatin, and Bynin, are also accessions of undoubted value.

Strophanthus Hispidus, the recently introduced cardiac remedy, has already won laurels, and Professor Fraser's prognostication of its uses and virtues has been more than fulfilled, and we must recognise in it a remedy of rare power and great value in failing compensation.

The new hypnotics, Paraldehyde, and Urethan, I sincerely trust will continue to hold the high place to which they have been elected. If future observers confirm and establish their freedom from cardiac contra-indication, they will soon push aside a drug whose danger and power for mischief is, I believe, only faintly appreciated—I refer to chloral hydrate.

Lanolin, the recently introduced basis for ointments, though only a few months old, is destined, I believe, to play a most important part not only in cutaneous medicine but in a much wider sphere. The rapidity with which it enters the system through the skin is astonishing. I am at present trying the inunction of several remedies in combination with it, and I hope to be able to report a satisfactory result.

The discovery and introduction of the antipyretic remedies, inaugurated by Skraup a few years ago, mark an important era in the history of scientific medicine—Hydroquinone, Thallin, Kairin, and Antipyrin—which have been tried by thousands of observers and reported upon by many of the great clinical teachers of the day. No truer test of the nature, extent, and rapidity of our progress could be found than is to be seen in a survey of the history of these chinolin derivatives had we time to enter into it.

About six years ago chinolin was synthetically prepared by Bayer and Skraup, and found to possess antipyretic virtues of a feeble and unsatisfactory type. Fischer, following up the discovery, produced the methyl and ethyl hydrides of oxychinolin which, under the name of kairin, attracted much attention a few years ago. Owing to the dangerous and fatal collapse following their administration, they have almost passed out of the field. Skraup, however, continuing his synthetical triumphs by aiming at the creation of substances more closely resembling quinine, produced methyloxychinolin, or chinanisol, whose salts were found to be powerful antipyretics. The administration of them, however, was attended with some drawbacks, and it was found that the hydrogen compound promised to give better results, and hence *thallin* or tetrahydrochinanisol—the most energetic of these bodies—was brought into use. It likewise was found to possess some dangerous qualities, and after a short time was born the almost harmless dimethyloxychinizin or antipyrin—the prince of antipyretics.

This drug has now been administered in many thousands of cases, and has been found to reduce fever heat with most remarkable certainty; the very few instances where unpleasant symptoms have been observed may be safely ignored, as the disturbances were noticed only where large doses had been given. One death attributed to its action may be fairly explained upon other grounds, and in judicious hands it may be regarded as practically innocuous. It has been given in fever arising from whatever causes with the same uniformity of result. I have administered it during the last two

years with frequency and to my entire satisfaction. It is in the burning and exhausting high temperature of phthisis that its value is most apparent. I have used it about fifty times under these conditions. Often have I seen the temperature of the parched and withered-up victim of tubercle fall 6° F. with a comfort and joy one could never forget. Here is a temperature chart selected at random from a series of hospital cases. Though the patient was suffering from an incurable malady of a terribly malignant nature—acute miliary tuberculosis—of only a few weeks' duration, the temperature fell with striking regularity after each administration; once a drop of 7° occurred, and the most indescribable ease and comfort was experienced. I wish that I could report that these remedies cured the diseased condition which causes the high temperature. I cannot satisfy myself that, as at present administered, they do more than is reported of them, but that their use is attended with the most beneficial temporary blessings no one can question.

The new remedies which I have thus briefly enumerated are but a few of the most remarkable, and I stop at them, not because the list is exhausted, but because already I have drawn too much upon your indulgence. Had time permitted I should have briefly referred to other startling strides in the progress of therapeutics. I must confess I omitted some because my language might have been considered more than wildly extravagant had I descanted upon them. It was my privilege to hear the first report in this country upon the trial of massage. I did not know that the speaker was Dr. Playfair, and, as he related the miraculous results of the treatment, I sat in astonishment wondering how any man could be expected to believe in results which appeared so utterly impossible. I certainly felt for the moment that the speaker's head required a little vigorous massage. But all he said and much more have been abundantly verified.

The results of the treatment of hydrophobia cannot be said to be less wonderful. Many remedies, such as these last-mentioned, cannot be exhibited in a collection like what we have to-night, but we must not forget them in our rapid glance at the proof of therapeutic progress. Such are the treatment of various nerve lesions by improved electrical appliances; of the hitherto fatal hyperpyrexia by cold baths; and of the treatment of phthisis by improved and better understood climatic agents.

Leaving then the past and the present behind us, and looking to the future, we ask ourselves—What are the prospects? None but

the foolhardy would venture to prophesy—our speed has been rapid during the last ten years, and the increased velocity has caused our equilibrium to become a little unstable.

Let us hope that, in our life-struggle against disease, we shall not at our *present rate* continue to add new weapons to our armoury. Rather let us pray for an armistice, during which time will be given to make ourselves thoroughly familiar with the handling, the range, and the action of the deadly implements placed in our hands.

The new discoveries run forward in swiftly diverging lines, and leave between them ever-widening wedges of virgin territory; ours be it to break up this unexplored soil and perfect—in the sure and slow way our fathers did—the science of the treatment of disease. Ever mindful of the universal law that high development and slow growth must proceed together, we might be tempted to prophesy that, in our approach to perfection, we may expect to move at a slower, steadier, and more uniform pace than in the immediate past. The bold outlines of a new science may be struck in a few short years, while it will take centuries of patient details to fill in and perfect it. So is it in relation to our recent advances in therapeutics.

Pursuing the broad suggestive latitudes, pardonable I hope in the opening address of a session, and discarding the logical exactness necessary in a paper, I might compare our position with a picture which suggests itself to me, as I reflect upon the recent *past*, the *present*, and our prospects of the *future*. There arises before me, as I speak, the idea of a great artist who is about to begin a painting which is to be his life-work, and which, in his yearning after immortal fame, he fondly dreams will hand his name down the ages.

A commencement is made, and the huge canvas is soon filled with the outlines of figures glowing with animation and beauty; and in a comparatively short time the entire plan of the picture starts into life under his enthusiastic touch. To the ordinary beholder the life-task in its effective and dazzling brightness is *almost* accomplished, and a few more touches of the brush only are needed to perfect the rapidly-accomplished work. Not so, however; the able artist realises that only *now* are his labours *really* beginning. For the last finishing touches to this graceful figure the statues of early Greece, Florence, and Rome must be studied. For that flowing head-dress must the wardrobes of the East be searched; while that antique armour may necessitate an examination of the spoils of ancient Egypt. For the warm sunlight of that glowing sky oriental hills must be climbed with burning feet ere the last

flashes of golden light can be added to the perfected vision. And the painter may feel the snows of winter upon his brow before the great task of his life receives the last strokes of development from hands already withering under the decay of age.

This brings us (in conclusion) to *our* part in the perfecting of the newer scientific therapeutics. Are we to stand idly by while others by their labours build up and give the finishing touches to the science of treating disease? Under the regretable difficulties and obstacles mentioned at the beginning of my remarks, it is in the power of few, if any, of us to demonstrate the action of remedies upon the lower animals. It is, fortunately for our immediate purpose, hardly necessary; and I need not say that experimenting upon our patients would be both unjustifiable and immoral.

It is our duty to clothe the figures created by the genius of Magendie, Brunton, Fraser, Hay, Koch, Foster, Schroff, and the host of pharmacologists who may be said to have created, by their recent researches, a new science. The details of their glorious artwork can be filled in only by us. At the bedside, by patient and laborious observation only can the gaps be levelled up or bridged over, which the lines of recent discovery have left between them.

Did time permit I would fain dwell upon the ennobling influence of such a motive imparted into the daily task of our arduous lives. Finding out and clinging to truth when discovered, each one of us would become a true scientist, *working* for and *living* for *one* object—the perfection of our science and the relief of human suffering.

As I sit down it is with the painful feeling that some of you may think I have been "exhibiting the excess of credulity associated with youth, and that unconsciously I have been tinting the science of our profession with imaginative hues and magnifying it in the mists of dawn." With all respect let me say it is you who are in error. Did we not *all at one time* feel overwhelmed with the grandeur of the profession we had just entered, or were about to enter? Let us ask ourselves—Why the change? And my seniors will pardon me when I say that the science of the treatment of disease has not become less worthy of veneration since the time they first entered its portals, but that their position and experience are exactly like that of my own when lately I stood spellbound under the shadows of the lordly Cathedral of Cologne, overcome with the silent majesty of its awe-inspiring dimensions.

To my surprise, after entering, and pausing a moment in the

long-drawn aisles and beneath the fretted vaults, my oppression soon passed away, and I felt myself ceasing to be impressed by the vast proportions of the gorgeous temple, till sweeping along the corridors of memory came up the lines of the master:—

> "Enter—its grandeur overwhelms thee not ;
> And why ? It is not lessened ; but thy mind,
> Expanded by the genius of the spot,
> Has grown colossal."

Art. V.—*Exostosis in the Auditory Meatus.* By John B. Story, M.B., F.R.C.S.I. ; Surgeon to St. Mark's Ophthalmic Hospital.

A brief mention was made of the following case in the discussion upon Mr. Arthur Benson's interesting communication to the Academy of Medicine on Aural Exostosis,[a] but the interest attaching to the subject, and the remarkable success that attended the treatment, in spite of the untoward complication of a perforation of the membrana tympani, induce me to publish a more detailed account of the case in this Journal.

Case.—In September, 1881, I was consulted by a gentleman, aged thirty-two, on account of a singing and deafness which had existed in his right ear for the space of a fortnight.

He stated that he had always been a healthy but exceedingly nervous man. Had had "debility," in which I found he included spermatorrhœa, five years previously, and had been much "dosed" in consequence.

I found his hearing on the right side to be $\frac{3\text{ m}}{\text{c.v.}}$, or $\frac{0{\cdot}5\text{ m}}{\text{wh.}}$ (*i.e.*, my ordinary conversation voice was heard at 3 metres, and a low whisper at half a metre's distance, and on the left side H $> \frac{4\text{ m}}{\text{c.v.}}$, or $> \frac{4\text{ m}}{\text{wh.}}$ (my consulting-room does not allow me to register higher powers of hearing). Right ear detected Politzer's hörmesser at a distance of from one-third to 2 metres, and the left heard it at more than 4 metres. Tuning-fork on vertex heard best in right ear.

The external ears were normal on both sides, but the meatus were closed by large exostoses growing from the posterior wall, that in the right ear being larger than that in the left. The growths were covered with a red skin, and were quite painless on pressure produced by tapping with a probe. On the right side I could not pass the very finest of lachrymal probes between the wall of the meatus and the exostosis, but on the left side I could do so easily enough. The growth in the right

[a] Trans. Acad. of Med. in Ireland. 1885. P. 129.

meatus sprang rather from the junction of the posterior and lower walls, while that in the left sprang directly from the posterior wall. Both were so deeply situated that their inner surfaces must have been almost in contact with the membranæ tympanorum.

This proximity to the tympanic cavities rendered all operative procedures so difficult and so dangerous that I was very loath to attempt surgical interference with either of the growths, but the hearing of the right ear had become so much deteriorated by the enlargement of the exostosis in the corresponding meatus, and the patient was in a condition of so much misery, caused not alone by the loss of the hearing on the right side, but by the confident expectation of a similar loss of that on the left, that I could not conscientiously refrain from giving him the chance of recovery which an operation afforded.

The bony growth was extremely hard and covered with an exceedingly thin skin. It was not tender in the least to the touch, and I expected to find but little sensibility in the tumour proper if I could but get rid of the cutaneous nerves, so I directed my first efforts to this object.

Oct. 10th.—I began to touch the surface of the exostosis with strong carbolic acid, with the object of destroying the skin over the bone, and after some few days of this treatment I bored a small hole in its substance with a dentist's drill. About a week later I used the dentist's drill again, under ether, and proceeded immediately afterwards to use electrolysis by inserting a gold needle attached to the negative pole in the opening made by the drill, and placing the positive electrode over the temple. This was done under ether, and continued for about two minutes. I did not venture to bore quite through the exostosis with the drill from the great danger there was of perforating the membrana tympani, which lay quite close behind the exostosis, and possibly was actually in contact with its posterior surface.

Four or five days after using electrolysis I noticed some suppuration in the opening, at the bottom of which bare bone could be detected by a probe.

After some days' interval I used electrolysis again, in the way previously described, employing eight cells for about the space of two minutes.

Dec. 3rd.—Electrolysis was used for the third time, during five minutes, 6 cells being employed, and no anæsthetic being used.

7th.—I burnt the growth with potassium cum calce, and on the 12th I repeated the proceeding.

20th.—Electrolysis was again undertaken—this time with 6 cells. I found the meatus much deeper, the exostosis having receded to a considerable extent, but still no signs of the membrana tympani were visible.

Jan. 3rd, 1882.—Attempted electrolysis with both electrodes inserted in the exostosis, but after two minutes it could not be borne any longer,

Fig. 1.

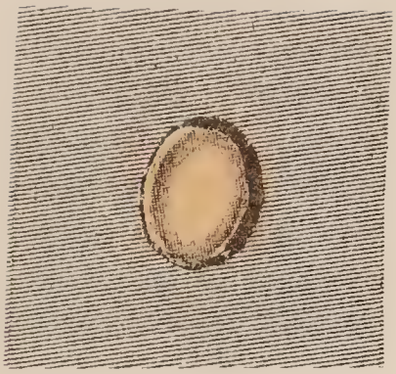

Fig. 2.

Fig. 3.

Fig. 1.—Right Meatus before Operation.

Fig. 2.—Right Meatus shortly after final cauterisation.

Fig. 3.—Right Meatus one year later. The two smaller projections had not been previously visible.

so I then used carbolic acid to dull sensibility, and on the 5th, after touching with the acid, I inserted Vienna paste, which was borne very well for about three minutes, after which the pain became intolerable.

17th.—My patient informed me that when he attempted to blow his nose matter poured from his ear. I found, on testing, that this was the case. A perforation of the drumhead had evidently occurred, in consequence of the use of the Vienna paste on the 5th. The exostosis was much less, and also the swelling of the skin lining the meatus. Some days after this, but before the perforation had healed, I made the second sketch of this meatus. The exostosis is markedly less, but the membrane cannot be seen at its back.

March 1st.—I found his hearing much improved, conversation voice and whisper and Politzer's hörmesser being easily perceived at the full length of my room, 4 metres; and a year later another examination enabled me to convince myself that the improvement had remained permanent.

I have seen him on more than one occasion during the past year—more than two years after the operations, and have had the satisfaction of proving that no relapse has taken place.

The last occasion on which I had the pleasure of seeing him was Feb. 19th, 1885.

It is unnecessary to dilate upon the numerous methods that have been recommended for dealing with aural exostoses—full descriptions are to be found in otological textbooks. An account of the preceding case, however, seemed to me worth publishing, as, although I have had under my observation during the past ten years a considerable number of such cases, this is the first and only one with which I have found it necessary to interfere surgically. Indeed, so long as the patient's hearing remains intact I do not consider any operation should be performed. Even the loss of the hearing of one ear does not, in my opinion, render such a dangerous proceeding—as any one of the known operations must be considered—unavoidable, and I should not have operated upon this case had the second ear been sound, or could I have assured the patient that the tumour in it was so unimportant that there was no rational probability of its increase destroying his hearing within any reasonable period of time. As it was I was fully under the belief that the hearing of the good ear was doomed to follow that of the other one in a very short time, and it has been a matter of agreeable surprise to me that in the last three years, during which I have had the patient constantly under observation, no increase whatever has taken place in the exostosis which was left untouched.

Art. VI.—*Aspiration of the Stomach.*

By George Foy, F.R.C.S.; Surgeon to the Whitworth Hospital, Drumcondra.

In the practice of surgery difficulties not infrequently present themselves that tax the promptness and resource of the surgeon to the utmost, and require of him that boldness of initiation which, if resulting from intimacy with his profession, leads to success.

The risk is truly great when a marked deviation is made from the beaten path and the recognised treatment put a one side. Nothing but a successful result justifies the operator in the eyes of the public. Every man can be wise after the event, and critics, with the results before them, can assert that the risks were not sufficiently guarded against, and that one of the many methods known to surgeons would have given better results.

If success attends the venture correspondents crop up who in years gone by had planned such an operation, and remind the operator that, though he is to be congratulated on his success, he has no claim to originality. Such considerations, no doubt, often deter men from leaving the beaten track, and in the emergency the surgeon finds long-forgotten warnings recalled vividly by his anxiety.

Yet, in face of all the difficulties and professional dangers, there are times when the surgeon finds it necessary to deviate from the beaten track and adopt new methods. In no region of surgery has this been more marked than in abdominal surgery. During the eighteenth and the beginning of the nineteenth centuries men were paralysed by the dread of peritonitis—any interference with the peritoneum was held as unjustifiable—and except tapping abdominal surgery was unpractised. There has been no proper explanation of this, for in the seventeenth century the same dread of wounding the peritoneum did not exist. Scultetus, who was born in Ulm, and studied at Padua, published his "Armentarium Chirurgicum" in Venice in 1661, in which is pictured abdominal section, and sutures are plainly to be seen passing through the parietal layer of the peritoneum. It is true that the Italian republics, and none more so than that of Venice, were far ahead of the Christian kingdoms of Europe in all that pertained to literature and art. The love of science implanted by the Moslem rulers had not suffered from the commonwealth into whose hands the famous university had passed—a commonwealth of whom Sismondi says, "Under her sway literature and science were

encouraged and the social and material welfare of the people cared for."[a]

The book of Scultetus being little more than a handbook in which the established treatment is very briefly summarised, possesses from that very fact a peculiar interest. Its publication in Venice may have been due to the greater facilities of obtaining permission for its publication from that liberal government which had so recently reprinted the condemned writings of Pomponatius, or it may have been caused by the manifest advantage of publishing the work in a city made famous by the classic reprints of Aldo Manuzio. Whatever the cause of its publication, the book bears evidence of the courage and skill of the Italian surgeons, and shows them possessing more correct estimates of the risks of abdominal surgery than was held by English surgeons one hundred years later.

Of recent operators, however, the fault cannot be said to be due to over-caution—what has been done in surgery is not now taken as a terminal point, but rather as a starting one, and when we look back on results we find ample justification—and amongst the more daring of his brethren we may include Dr. Paul, of Danville, who, in the year 1873, in a case of laudanum poisoning, performed the operation of aspiration of the stomach on a newly-born baby.[b]

This case was unknown to me when, at 3 o'clock one morning in November, 1884, I was called to see a man who was reported as dying from drink. I found the man lying dead drunk, from having taken a very large quantity of claret and whiskey, on a filthy floor, surrounded by a crowd of drunken companions, and was told that for two hours every effort to rouse him from his helpless state had failed. The man was totally devoid of sensibility, his extremities were cold, his face livid, the pupils widely dilated, respiration hardly detectable, no pulse, and the heart impulse hardly to be felt.

I commenced the treatment by opening the median-basilic vein of the left arm, and by rubbing the forearm briskly got some ink-black blood to flow, and did not stay the bleeding until about sixteen fluid ounces had been taken. Whilst the arm was bleeding I pushed the fine trocar of an aspirator through the abdominal wall in an upward, backward, and outward direction from its point

[a] Sismondi. Hist. des Rép. Ital. IV., 340-60.

[b] Dieulafoy on Pneumatic Aspiration. 1873. P. 133.

of entrance at the sternal end of the eighth rib. The cannula was attached by the ordinary method to an exhaust bottle, and on turning the cock I was pleased to see a stream of claret-coloured fluid. The heart commenced to beat; the blood stream from the arm became arched and more full; the pulse was now easily felt; respiration recommenced; and I withdrew the cannula, not wishing to empty the viscus by the aspirator, lest it would slip off the tube, which was shorter than I would have wished. With a stomach pump I now washed out the stomach, and soon afterwards the man was able to speak. He was put into a warm bed and the next day was sufficiently recovered to go home.

I saw no other remedy than operation. Apomorphia was put aside by me because I found by actual experience that when sensibility is quite deadened it has no emetic action. The respirations were too feeble to allow, in my opinion, the introduction of the stomach tube. The case appeared suitable for aspiration, and the only risk that caused me uneasiness was the slipping of the stomach from the cannula—a risk guarded against by withdrawing the instrument sufficiently early. Peritonitis was possible, but hardly probable, and from the position of the gastric blood-vessels the danger of wounding one of them was very slight. The venesection may fairly be credited with having contributed to the recovery, though, I think, the principal agent in saving the life was the aspirator.

The utility of aspiration was brought before the Medical Society of Paris at the meeting on the 26th November last by M. Sevestre,[a] and in the discussion following his paper, M. Ferrand, M. Gallard, and M. Dieulafoy bore testimony to the usefulness of the instrument. Though with two cases of death resulting from puncture of the head of the colon recently reported in American papers, the innocuousness claimed for puncturing the peritoneum by M. Dieulafoy at the discussion is hardly correct.

Every year I find the aspirator more useful, and I have now used it for emptying almost all the body cavities—puncturing serous and synovial membranes without a bad result; and I think the following extract from the *Medical Times* (1873, p. 500), for the knowledge of which I am indebted to Neale's "Digest," fairly states the advantages of aspiration:—"There are cases of cancer of the stomach where there is such enormous dilatation as to interfere with the action of the heart and to threaten a speedy

[a] La France Médicale. No. 138.

dissolution. Under such circumstances we have seen the fine aspiration needle introduced without a shadow of risk, bringing back the patient from death's door to comparative comfort, and that too under conditions when even the attempt to pass the stomach pump might have been fatal."

In bringing this paper before the profession I simply wish to give my experience of an operation that I have found to be safe, quick, and reliable.

ART. VII.—*Select Clinical Reports on Cases of*—(I.) *Obstinate Vomiting, the result of Land-Sickness;* (II.) "*Mistaken Identity*" *on the part of Four Persons;* (III.) *Acute Articular Gout;* (IV.) *Subjective Osmidrosis.* By ARTHUR WYNNE FOOT, M.D. Univ. Dubl.; Senior Physician to the Meath Hospital; Professor of Medicine in the Royal College of Surgeons in Ireland; Fellow of the King and Queen's College of Physicians, &c.

THE following cases, picked out of my hospital note-books, show that as strange a mixture of odd cases may be observed there as is to be met with in general practice.

Among the cases of dilapidated stomachs, contracted livers, decayed lungs, broken-down nervous systems, and worn-out hearts, it is a variety to meet with something besides the results of poverty and overwork.

I. *Obstinate Vomiting from "Land-Sickness."*

At 11 a.m. on 18th September, 1885, a man, aged twenty-seven, applied at the hospital for relief for continued vomiting, which was accompanied with cramps in the abdominal muscles. Though there was no report of any purging, he was admitted and attended to at once, more particularly as choleraic cases were not unexpected about this time of year. He was put at once to bed, warmth applied to his feet and stomach, a sinapism to the nape, he was given effervescing draughts and ice to swallow in small pieces, yet the vomiting continued all day and through the following night.

Next morning, 19th, instead of finding him well, as I had expected, he had by his bedside a large basin nearly full of greenish fluid, towards which he turned himself every two or three minutes to make further additions, which were contributed with loud-roaring retchings, exactly similar to what is heard on a steamer during a rough passage. Between the acts

[a] Read before the Medical Section of the Academy of Medicine in Ireland, Friday, December 17, 1886.

of vomiting he writhed with cramps in the abdominal muscles. The urine was scanty; he "had not power to make any." The muscles seemed wearied out from their almost continuous tension. His head was clear and he spoke most intelligently, but conversation seemed to aggravate the sickness, and most of the interesting points in the history of the case were elicited afterwards. He was apyrexial; the circulation was not hurried; the tongue was discoloured with bile, but not particularly furred; though there had been no evacuation from the bowels for six days, there was no evidence of internal obstruction. A mixture of chloral hydrate (℥ i + aq. laur. cer. ℥ i + aq. chlorof. ℥ vi.; dose, ℥ss., tertiis horis) was given him, sinapisms were reapplied to nape and epigastrium, and morphia injected hypodermically, without checking the vomiting, which continued, with a respite of three hours—during which he had some sleep, of which he was much in want—till next day, 20th.

As he then (20th) complained of feeling very weak, he was ordered a mixture of equal parts of brandy and water, to be taken as often as he wished. He was put into a hot bath this day, and felt immediate relief—the stomach became quiet, he got hungry at once, slept well the following night, and next morning (21st) eat heartily of bread and milk, and was making water freely; the cramps and pains had gone, with the exception of some muscular soreness. After another hot bath (on the 21st) he was quite well, and left hospital the following day.

The cause of this attack of obstinate vomiting was sea-sickness, which persisted after his leaving the vessel, and it was not the first time it had happened to him.

He had come from Glasgow to Belfast in a screw steamer on 14th September, as a deck passenger. A sailor, taking pity on his sufferings, had let him have his bunk for a small consideration. The passage occupied seven and a half hours (not longer than usual). The sea, according to nautical estimation, was not particularly boisterous; the sailors said "there was a bit of a sweli on after a breeze" (there had been an "American storm" on the 12th and 13th). His sea-sickness continued for two days in Belfast (where he stopped, hoping it would cease before he came on to Dublin), continued during the railway journey from Belfast to Dublin, and he vomited several times while driving across Dublin on an outside car. In Dublin, on the 17th, he had medical advice, and an enema was prescribed for him, after which he had a short respite from the vomiting. As it soon returned he applied next morning (18th) at the Meath Hospital, as before mentioned.

Twice already this year he had suffered severely from sea-sickness, continuing after he had reached *terra firma*. In January he had come from Glasgow to Belfast, been sick the whole time, and for two days afterwards in Belfast; on his return to Glasgow he chose the shortest sea route, *via* Larne and Stranraer—channel and loch passage about two

and a half hours. He was sick in the train between Stranraer and Glasgow, and continued so for five days in Glasgow before he recovered. He would not have tempted Neptune on the present occasion but for a wish to see his mother, who lived in Dublin, during his holidays, and that he thought the weather at this time of year would have been more propitious than in mid-winter. He was a traveller for a draper in Glasgow, and his excursions were limited to the vicinity of that city. He could never bear the motion of a boat of any kind, and had been made sick by a swing; had a "bad head for heights," yet he was not liable to sick headaches, nor of a bilious temperament; was easily sickened by alcohol, but not by tobacco. He was the only member of his family so very susceptible to sea-sickness. He had brown hair and a fair skin, but could not be said to have the "light complexion and light hair" of those who sicken first at sea.[a]

This patient was an example of that kind of constitution which is morbidly prone to feel the effect of the motion of a vessel. There are some, on the other hand, who are totally insusceptible to the concussions which in the majority produce *nausea marina*. The continuance of his vomiting, for nearly nine days, even after his arrival on shore, shows how possible it would be for such a person, on a lengthened voyage, to die of sea-sickness.

II. *Case of Mistaken Identity on the part of Four Persons.*

The following incident of the memorable "whisky fire" which occurred in Dublin on the night of 18th June, 1875, produced a strong impression on me, and the following is an account of the incident from notes I made of it at the time:—Michael Healey, aged twenty-three, a corn porter, was one of several men who were brought to the Meath Hospital early on the morning of Saturday, 19th June, 1875, "dead drunk" from whisky taken at the great fire of the bonded stores in Chamber-street on the previous evening.

He and three others, equally comatose from alcohol, lay on mattresses on the floor of the theatre in very good light. Relatives came during the day to look for missing friends who were scattered about among various hospitals.

At 3 p.m., on the 19th, a woman of the name of Kinshela, whose son was missing, came to look for him in the Meath Hospital. She immediately recognised the man Healey as her son, asked to see his trousers, and swore to the clothes on him as those of her son. She sat beside him, lamenting over his condition and the evils of drink till 8 p.m. Meanwhile her husband had arrived; he, too, recognised his son, and

[a] See Dubl. Med. Press. Vol. XXIV., p. 41.

observed to me with much parental feeling, "Wasn't it an unfortunate thing for a father to see his son in this condition," and "if he had stayed at home this wouldn't have happened." Healey was still comatose from alcohol, and could neither speak nor open his eyes, but was not blackened, burned, or disfigured in any way beyond a somewhat bloated, congested appearance about the face.

Two daughters of the Kinshelas also came, and they, too, had no hesitation in agreeing they had found their missing brother. The supposed father remained by Healey for two hours; the two girls stopped a little longer; Mrs. Kinshela, as before mentioned, left the hospital at 8 p.m. to go home for the night. She found her own son at home, but did not notify this fact to any one in the hospital till the following (Sunday) morning, when she told the gate-porter she had got her son.

On Saturday night, at 9 p.m., an hour after Mrs. Kinshela had left, the real mother came, immediately recognised her son, and when told that he had been claimed by several other people, she said, "If he has not marks of burns upon his back and the side of his neck he is not my son." On stripping him the promised marks were found of burns which, when a boy, he had received in a match manufactory. The real mother seemed to recognise him more immediately than the false one, and the resident pupil, Mr. Hill Malone, told me the man appeared in a dim way conscious of the voice of his mother; while in reference to the other woman, he had not observed the least effect on him from her voice. Healey was a married man, but his wife did not come to look after him, as she was in the Union Hospital, and had either not heard of the occurrence, or was unable to come.

All along Mrs. Kinshela seemed to have some misgivings about Healey being really her son. She went home in the afternoon to get her husband to come and give his opinion on the subject. She went home at 8 p.m. and left the man, though he was not expected to live through the night, and, in fact, did die on Sunday morning. The real mother remained all night. The opinions of the two Kinshela girls were probably much influenced by those of their parents—*i.e.*, when the father and mother thought the man was their son, the daughters, if they had any doubts about the identity, may not have felt bold enough to differ from such unquestionable authorities. Mrs. Kinshela offered to swear to the man's clothes, but the dress of working men is often very much alike. Had he been able to open his eyes, or to speak, the difficulty of identification would have been much lessened, as, independent of their colour, their *expression* gives a difference to *features* otherwise similar; and everyone knows how specially characteristic the voice

is, and that it will recall to mind an individual whose features have been totally forgotten.

The whisky, which ran along the side channels in the streets during the fire, was of unusual strength and a good deal of it new. About thirty persons were brought to the hospitals in a state of coma; two deaths occurred among those carried to the Meath, one in the Richmond, and one in the Mater Misericordiæ Hospital.

It is seldom that the question of identity is difficult to decide in reference to a living body, and, when so, it usually arises in case of one returning home after a long absence, or where the plea of mistaken identity is put forward by one charged with some offence against the law. More usually does this question concern the dead—*Of whom is this the body?* (as in the case of Dr. Livingstone), where a body is brought from abroad, and doubt exists whether the remains are those of the person they are stated to be. It is one of the questions specially submitted at every inquest to the jury for their consideration.

III. *Acute Articular Gout.*

On 27th October, 1885, a man, aged sixty-four, of sanguine temperament, corpulent, full-blooded, of plethoric habit of body, was admitted to the Meath Hospital with all the objective symptoms of acute gout in the great toe of the right foot and in the left wrist. He had, in addition, a gouty abscess on the dorsal surface of the last phalanx of the middle finger of the left hand, and several tophi (gout-stones) in the helix of the ear on either side. He was the "jolly landlord" of a well-known house of rest and entertainment on the Naas road, weighed nineteen stones, and said that for the last thirty or forty years he had been in the habit of drinking fifteen or sixteen pints of porter every day! A week before admission he had been struck with a sudden pain in the ball of the right great toe, and soon afterwards a similar pain seized him in the left wrist. He had never felt a twinge in these parts before, but, nine years ago, he had had his first attack—in the left great toe and the middle joints of the right hand. For the week before admission he had had no sleep at night on account of the severity of the pain, and had spent the nights "twisting about like a windmill," not being able to lie with comfort in any position. He was otherwise apparently in robust health, his "Bardolphian" countenance beamed with good nature in the daytime (the pain was then in abeyance), and he had a joke and a laugh for everyone, or a story of incidents which had occurred on the Naas road. The skin about the root of the right great toe was deeply red, with a tendency to lividity—tense, glazed, and shiny,

hot to the touch; the adjacent parts were œdematous, and coursed over by several turgid veins. The left wrist was less reddened, but more swollen, than the great toe; the superficial veins were not so conspicuous here as in the foot, the pain and tenderness seemed equally marked in both places. The urine was scanty, high-coloured, very acid, and deposited urates copiously; the urates were deeply tinted with the fiery pigment of purpurine. The right foot and left wrist were at once wrapped in fine wadding, and covered hermetically with guttapercha paper. After his bowels had been freed by mist. sen. co., he was ordered a mixture—viz., Vin. colch, ʒij; Sulph. magnes., ʒj.; aq. cinnam., ʒviij.; dose, ʒss., t. d. Milk diet, and a glass and a half of whisky in the day. At the same time I opened the "gouty abscess" which was at the proximal side of the matrix of the nail of middle finger of left hand, giving exit to a lot of milky paste, consisting of pus mixed with urates. He said it gave him relief to have this done.

By the 3rd of November (a week after admission) the pain and swelling had abated both in hand and foot; but, at 2 a.m. of this day, he was seized suddenly with a pain, referred to his heart, and said to be precisely of the same kind as that which had ushered in the attack in toe and wrist. A sinapism was applied to the chest, the colchicum mixture was stopped, and one of cardam. tinct. co. and spt. am. arom. substituted for it. There was nothing unusual to be observed about the sounds or rhythm of the heart, and it is likely that this sudden anginal paroxysm (which did not recur) was connected with chronic endo-arteritis of the coronary arteries.

6th November.—He was put on potas. bicarb., ʒiij., sod. iod., ʒj., and inf. calumbæ, ʒ 8; dose, ʒss., t. d. While taking this both ankles were attacked; and as he said the potash medicine was taking away his appetite he was given 15 grains every third hour of salicylate of soda, which was soon reduced to half the quantity. The skin over the affected joints desquamated freely, being particularly itchy during the process. He left hospital on the 28th of November, 1885, just a month after admission, with some stiffness in his foot and wrist, but in such a condition that he could readily attend to his business.

In this case there was no history of hereditary gout; it seemed to have been acquired by the combination of insufficient exercise and over-use of malt liquor. The cases in which the disease is developed during or after middle-life mainly originate *de novo*. It generally appears earlier in those who have inherited it. When the anginal attack occurred at the gouty hour (2 a.m.) he was much alarmed, because he had heard of gout "flying" to the heart, &c. The expression "flying gout," which is a most extraordinary one, seems to have been first used by Mrs. Hunter (wife of John Hunter),

in a letter to Jenner about her husband,[a] in which she says (Sept. 13, 1785):—"He has been tormented with a flying gout since last March."

IV. *Subjective Osmidrosis.*

The following very strange case first came under my notice at the Meath Hospital on the 23rd of September, 1878. He was a compositor, aged twenty-four, unmarried, stout, florid in complexion, of active and excitable temperament. He showed the most acute anxiety to be admitted and carefully examined, assuring the pupils in the admission room that he was a peculiar case. When I saw him in bed the next morning the following particulars were elicited from him:—He was desirous to be cured of "an offensive heat or vapour arising from his body or breath, of which people complain," saying that his vicinity makes them sneeze, yawn, or feel drowsy. He declares that this emanation makes them turn pale, that it makes his own conjunctivæ smart, and that his presence similarly affects others near him. I smelt his breath during the fullest expiration and after coughing, and it was almost inodorous; he had not fœtid perspiration of the feet; he thought the exhalation came most from the axillæ, but I could not perceive that they were more hircic than such regions usually are, certainly not peculiarly so. His skin was soft and greasy, there was a notable accumulation of fat over the abdomen, he used to indulge his appetite in eating very much, and also took "a fair share" of drink. He had been salivated for syphilis fifteen years ago; he had never had any symptom of lead-poisoning. It is two years since he became convinced that he was the source of the emanation of a noxious effluvium. If anyone sneezes near him he at once attributes their doing so to his presence. He is civil and intelligent, yet has been kept from employment, he asserts, owing to men objecting to work in his vicinity, and has for this reason lost situations both in Dublin and London. He had consulted a doctor in King's College Hospital, who gave him pills of creasote and carbolic acid, and desired him to wear chloralum pads in his axillæ and on the top of his head without benefit. His bowels are always constipated; he has a tendency to flexor cramp in his hands and to closure of the lower jaw. His mind is very much distressed from thinking on the annoyance to which he believes he is subject, and his sleep is disturbed from uneasiness of mind. Though I stood over him in bed for nearly an hour I could perceive no more odour from him than would come from any other greasy-skinned man of gross habit. As a proof that his presence was felt in the room, he told me that a young lad in the ward had sneezed six times the day before; and on the morning of the 25th, when one of

[a] Palmer's Life of John Hunter, p. 96.

the class sneezed, he interrupted me while speaking to draw my attention to that evidence of his complaint. He connects every sneeze with himself. He says people have sneezed at the opposite side of the road when he was passing by; and when I asked him what proof he had that he was the cause of their doing so, he says he never observed such a thing to happen till he got this complaint. No suggestion that they might have been taking snuff or catching cold will he entertain for a moment. Thinking he might be affected with a subjective sensation of smell arising from fæcal retention or a disordered stomach, his bowels were well cleared with castor oil, and he was put on a course of dilute nitro-muriatic acid with infusion of gentian, and permanganate of potassium pills, while he had sound sleep at night from chloral and bromide of potassium. Still he remained quite positive that some noxious odour emanated from him which affected the Schneiderian membrane of anyone who came near him.

As about this time a curious case had occurred in Dublin of the elimination of sulphuretted hydrogen in the urine, I had his urine collected carefully, and Dr. Lapper was kind enough to make a more accurate analysis of it than I could undertake.

Urine of 1st and 2nd of October = (24 hours):—Total quantity = 61 fl. oz.; normal tint, usual amount of sediment of vesical mucus and epithelium; no peculiar smell from it, heated or in the cold; specific gravity, 1014; very acid; no albumen, sugar, or bile; urea = 0·8 per cent.; phosph. acid (P_2O_5) = 0·135 per cent.; chlorine = 0·324 per cent. Dr. Lapper could detect nothing abnormal in the sample.

As I could make no impression on him, he was not long retained in hospital. I considered him a kind of hypochondriac. He was morbidly attentive to the character of his excretions, used to defecate upon a piece of paper, the more conveniently to study the qualities of his motions, and examined his pulse and tongue daily.

I saw no more of him for five years. He turned up again in the month of May, 1883, and came to know had I yet found out a cure for his disease. I admitted him at once, and commenced a fresh study of him.

The following notes of his own words, taken down by myself at the time, might seem too ridiculous to print but that I have met with an analogous case in a gentleman of position and education, which will be detailed in connection with this:—

His complaint is that "when in the workshop (he is a compositor) for a month his fellow-workmen feel ill, bad, affected with lassitude." When he has affected them thus, he leaves "through scruples of conscience." Can give me no other proof of these results of his presence than his own conviction. He affects horses, makes them yawn and shake their harness. Fowls yawn by stretching out their wing and the hind leg of the same

side "to refresh themselves." He makes people yawn at the other side of a sheet of glass, as when looking in at a shop window. What annoys him most is that he cannot follow "his profession;" if he does not leave the job he is employed on, his fellow-workmen give it up. The sensation his presence excites is that of an oppressive heat; the temperature of a room he is in changes. He believes he has communicated this disease to others—to his wife among them; and that in one instance it was communicated even to a third person. Animals are affected by his presence; he has heard cats sneeze at him. A dog, ten months old, "and which was no fool of a dog," ran away from him. A singing thrush "became dumb" when he came near it. Horses and men have been affected against the wind—*i.e.*, when to windward of him.

As I was aware that the late Dr. Jonathan Osborne[a] had a high opinion of the internal use of chloroform in hypochondriac affections, I put him on ʒss doses of spt. chlor. in decoction of Iceland moss three times a day. After a week of this treatment he had become very weak and faint, and perspired profusely. The chloroform was stopped, and he was put on mist. quininæ, and the next day he had quite recovered from what looked like chloroform syncope. There was no alteration of his dominant idea. He took delight in talking of his "disease," even though his serio-comic observations created roars of laughter in the class. For the sake of discipline I was unable to keep him in, as he became quite a show, and many strangers came to see the "*sneeze-compeller*," and to draw him out about his strange influence upon men and animals.

In January, 1884, he presented himself for the third time at the hospital, and, lest I should have forgotten his case, he handed me the following characteristic document, written in a neat hand, which I copy *verbatim* :—

"Gentlemen,—In order to save time and to be explicit, I have, in reference to my case, placed upon paper these few

Observations :—

"When I go to work—when I lay my attention to my business as a compositor—the room where I am employed becomes unpleasant—that is, 'stuffy,' warm, and oppressive. After three or four days all who have associated with me for that time become affected as follows—they sneeze, yawn, turn pale, complain of headache, and feel generally disinclined to continue work. This I have proved in fifty different places, and have left them all through conscientious scruples, but never explained. I disturb everyone *by my presence* (much to my annoyance), and always feel better when I am alone; disturb people who may be near me from falling

[a] Dubl. Quart. Jour. Med. Sci. Vol. XVI., p. 463.

asleep, and when they ultimately do fall asleep they awake in the morning complaining of being tired and unrefreshed. Inferior animals (the horse and dog, for instance) become uneasy if I am near them for any time. Persons going smartly about their business in the street (30 say out of every 100) yawn as I pass by; others sneeze when I am near them in the street. Women cross themselves when I suddenly meet them turning a corner (without colliding). Young children run away when they see me approach. Wherever I go I am 'suspected' after a short time. If I go into a tavern, for instance, all present turn round and look at me after standing by a few minutes, and severe remarks are sure to follow—such as, 'I thought Marwood was dead.' 'So did I.' 'So did I too.' 'Maybe 'tis Binns!' . . . When in company with the sex, they become disgusted *with my presence*, no matter how gracious I try to be. 'What kind of man is this?' is the current remark with the ladies. *Persons who know me can tell whether I am in the house or not, even if they do not see or hear me come in!!* Cannot fix my attention on anything for more than five minutes. Cannot stay in the one place. Must always be moving. Perpetual miserable feeling of *ennui*. After a short time *persons get nervous in my company*. I myself have a good nerve, could stand and see a man cut up by a locomotive without being moved in the least. Nothing has a charm for me—not even money. My whole anxiety is owing to loss of independence, caused by not being able to follow my profession in consequence of this infernal infirmity. Have had to live on my relatives for years. Indecision. Depression. *Food seemingly does not nourish the body*, although I live pretty well, and have a good appetite. Thin blood, cold surface. Decay of muscle. Consider that the economy of the nervous system—or indeed the economy of nature's realm—has been disturbed through some cause—indiscretion, concupiscence, venereal disease, or what not. Pain in back of head lately. Never sought advice in Dublin outside of this hospital. Was ever mortal so afflicted? Four years is a long time to live on such terms as these and to be in one's right mind. Dr. —— is the only physician who has given me a fair and patient hearing, and I believe his wish is that he could cure me. Dr. —— also put a name on my disease, which gives me a hope that he can yet do something for me.

"Obediently,

"Harpur."

A case, similar to the preceding, which, though not an hospital case, I had many opportunities of studying, came under my notice several years previously, and appears from its singularity worthy of being related in connection with the above. It was that of a gentleman who laboured under the impression that he diffused around him an unpleasant effluvium, any indication of which I never could perceive, nor did I ever

find any positive evidence that any one else had ever done so He was aged thirty, very stout; weight, 15 st. 10 lbs.; fair-haired, fresh-looking; said he felt in perfect health, and indeed looked the picture of it. He came to me complaining "that he seemed to use up all the fresh air" in a room, railway carriage, or any confined compartment; that there was an overpowering smell diffused from his person which made people faint, open the windows in a railway carriage, or avoid his company. He asked me could he "be getting a skin like a black's," and also for "a large dose of castor-oil to sweep it all out of him." It did not proceed from decayed teeth, diseased nose or tonsils, nor was it from his feet. As he drank and smoked a good deal, eat his meals hastily and at irregular hours, and had some feeling of weight in his stomach after eating, I hazarded the conjecture that it might come from his stomach, although I could perceive no unusual odour from his skin or breath, while closeted with him in a small room for some time. I did not venture on a first acquaintance to question the many proofs he offered in evidence of the reality of his complaint. He was ordered pills of creasote, a mouth-wash of glycerine of carbolic acid, a mixture of hypo-sulphite of soda, sulphurous acid, and infusion of quassia, and advised to keep in the open air as much as possible. He had of late been much hurried and worried by business; an election petition had been lodged and carried against his brother, to whom he was agent, and this had thrown much extra work and trouble on him.

I saw him first 6th March, 1872. On the 12th he said he was satisfied the odour did not come from his stomach, and therefore had not used all the medicines ordered. He explains that it is not so much a bad smell from him that he suffers from, but that he seems to absorb all the fresh air in a room, making it close, heavy, and oppressive. He even dislikes going into the smoking-room of his club, because he feels he is disagreeable to others. He thinks "the smell from his skin is much worse after Turkish baths than before them." I increased the dose of creasote in his pills, and ordered sulpho-carbolate of sodium with cascarilla.

8th June.—He does not find the medicines have had any effect, and asks for something else, reminding me that "while enjoying perfect health in every other respect, his presence had the effect lately of making a room so close and disagreeable as to bring water to the eyes of every person present." I then gave him chlorate of potassium, dilute muriatic acid, and infusion of quassia.

22nd.—"The last medicine had not the slightest effect." He was afraid it would require something which would make a constitutional change to effect a cure. He would prefer any remedy, no matter how tedious, disagreeable, or dangerous, rather than remain as he was, as, "while quite well in other respects, his presence at once brings tears to the eyes of anyone near, and makes a room as suffocating as if fifty

persons had slept there." Was put on iodide of potassium, in 3-grain doses, ter die.

23rd July.—The last prescription "no use." Has given up smoking and become most particular about eating and drinking, takes both horse and walking exercise every day, Turkish baths frequently, sponge bath daily. He does not find anything wrong with his stomach, and thinks his complaint must arise from "gouty tendencies," although they have never otherwise manifested themselves. He suggests that "some very strong and powerful medicine for purifying the blood and removing the humorous matters might be what is required." Was given 4 min. doses liq. arsenicalis, with 5 min. doses tinct. sem. colch. in liq. ext. sarsæ, ter die, and told to drink lithia water freely.

11th August.—Had not experienced the slightest relief from these remedies. He had "gone on Banting," and been already reduced a stone in weight. Begged of me to mention his case to some of the celebrated physicians, and ask them had they met a case like it, and what was the cure for it. "I know the treatment must be perplexing, as I have no apparent symptom of disease to show what organ is affected, my health and sleep being otherwise perfect, and I take scrupulous care as regards my eating and drinking, and about taking exercise. I have given over smoking, and I would sooner suffer from the most dangerous disease than my present complaint." I now ordered 20 min. doses acid. sulph. arom. in water, twice a day. He had more than once spoken of the eyes of those near him smarting and becoming watery from his presence, and it occurred to me that some ammoniacal compound might be given off from the skin. It is stated that all sweat of a putrid odour contains free ammonia.[a] He was directed to sponge the axillæ after his baths with a lotion of chloride of zinc and rose water, use carbolic soaps, and continue on the Banting system, till he lost 2 stones more.

8th September.—Last prescriptions have had no more effect than the previous ones. His weight is now reduced from 15 st. 10 lbs. to 14 st. 2 lbs., and still lessening rapidly. He would say that "the most remarkable symptom is that any person in my presence, even in the open air, gets at once red in the face as well as having tears brought into his eyes." Of late he has taken no wine or alcohol in any form, and even larger doses of hismedicine than had been ordered. Desired to continue the Banting till reduced to 13 stones, and suggested to try a wineglass-ful of Murray's Fluid Magnesia three times a day.

10th.—In reply to my inquiry whether he could perceive any odour himself, he said, "I perceive the exhalation most plainly in a room in which I have been in for some time on my return to it. I think I gave all the medicines a fair trial, as I took two or three times the doses ordered of each for about a fortnight. Banting and grouse shooting are

[a] Dis. of Skin. Erasmus Wilson. P. 583. Fourth Edition.

reducing my superfluous fat. I shall continue the Banting till I reduce myself to 12 stones." He had at this time tried creasote, charcoal, hyposulphites, sulphurous acid, sulphocarbolates, chlorate of potassium, tonics, iodide of potassium, Turkish and cold baths, arsenic, colchicum, lithia; giving up smoking and alcohol; exercise, fluid magnesia, aromatic sulphuric acid, carbolic soap, lotion of chloride of zinc, Banting.

16th December.—In nowise improved. Now advised him to give up butter and fat-forming foods, and to take plenty of exercise in open air. The butter was to be abandoned because it promotes the formation of volatile fatty acids, eliminated by the sebaceous glands, as demonstrated by Magendie's experiments of feeding dogs on butter.[a]

I suppose he gave me up in despair, as I saw no more of him till 26th February, 1875, when he said he was quite rid of his complaint. He was then just as fat and florid as usual.

I have met with a third instance of this affection or disease. It was in a man who was sent up to the Meath Hospital, six or seven years ago, from the County of Carlow. I have lost, or cannot find, the notes I took at the time, but have a perfect recollection of the main features of his case. He was driver of a posting-car connected with Ward's Hotel, Bagnalstown, and complained that the smell he gave off annoyed passengers, even on the other side of the car, in the open air, and that to such a degree that he said unless he could be cured he should have to turn to some other occupation. He was of middle age, robust, in perfect health, not red-haired, neither more nor less odoriferous (as far as I or any of the students could perceive) than other hospital patients. He thought he was more diagreeable in summer than in winter; but accounted for this by his wearing a heavier overcoat in winter time, which interfered with the dissipation of the vapour which he believed came from him.

I have called these cases by the name of osmidrosis (ὀσμή, odor; ἱδρώς, sudor), because the perspiration, even in persons of the Caucassian race, has, on account of volatile organic acids, often a peculiar odour. It is, moreover, in use in the text-books.[b] I have used the word "subjective" because I am inclined to think that each of the individuals were labouring under an hallucination. In the case of the two hospital patients none of the class or of the nurses could ever perceive any smell at all approaching in degree what they said they were the originators of. In the case of the

[a] See Russell Reynolds' Syst. Med. Vol. III., p. 362.

[b] *Ex. gr.*, E. Wilson, Diseases of Skin; Quain's Dict. of Med. (Art. Perspiration); von Ziemssen, Handbook of Skin Disease.

gentleman, though he said he made small rooms unbearable, I several times asked people with very sensitive noses was there any peculiar smell in a moderate-sized room where he had been for fifteen or twenty minutes, and they never could perceive any immediately after he had left it, nor did I ever find it necessary to open windows or use deodorants after a visit from him. Hallucinations of smell occur more rarely than of sight or hearing; yet hysterical patients, in particular, often smell objects which are not present—such as sulphur, musk, violets, &c. Feuchtersleben[a] was acquainted with a lady who was often tormented by a charnel smell that seemed to follow her everywhere, for which there was no organic cause. Cases are common enough of bromidrosis pedum (fetid perspiration of the feet), which arises from decomposition of the products of the *sebaceous* glands, but there are very few detailed cases of the functional disturbances of the *sweat* glands. Prof. Geber[b] mentions his having had under treatment a patient who otherwise did not show the least traces of bromidrosis, but whenever he began to perspire more freely, as after eating and drinking heartily, or by active exercise, so offensive an exhalation spread around him that he was forced to shun all social intercourse. Baths, cold ablutions, and hydro-therapeutics, continued for weeks, produced no improvement.

Anomalies of the special senses occasionally occur in a state of apparent health. These conditions are, as Griesinger remarks, in general far too little studied, being usually thrown into the comprehensive class of hypochondrias. Sometimes organic change is found in connection with these sensory disturbances. In a patient who had strong hallucinations of smell a fungus of the dura mater, as large as a hazel nut, was found in the cribriform process, and surrounded by the olfactory nerves.[c] In another patient, who had been constantly followed for more than six months by a smell of dead bodies, there was found an abscess of the corpus callosum.[d] Suicide even has been resorted to so as to escape from the persistent annoyance of a smell. On 17th April, 1882, a man applied at University College Hospital complaining that so terrible a stench came from ulceration of the stump of his leg (the limb had been amputated by Mr. Marshall five or six years earlier) that no one

[a] Medical Psychology. Syd. Soc. P. 233.
[b] Handbook of Skin Disease. Von Ziemssen. P. 506.
[c] Vienna Asylum Report, 1858. P. 266.
[d] Griesinger on Mental Diseases. Syd. Soc. P. 101.

could bear to come near him. On examination this was found to be a manifest delusion. On the following day, however, he was admitted, having made a most determined attempt to commit suicide by throwing himself upon the point of a sword-cane, which transfixed the stomach and left lung. He died in five days.[a]

The opinion may, I think, be fairly entertained that in these cases, which I have called subjective osmidrosis, there was some disorder of the elementary sensory apparatus appropriated to the function of smell, causing the sensory cortical centre to enter into spontaneous activity in the absence of any external impression, producing thereby a hallucination—that is, a sensation in the absence of any external cause, or of any local irritation of the peripheral end organs or of the sensory conducting paths.

Art. VIII.—*On Excision of the Rectum.* By Kendal Franks, M.D. Dubl.; F.R.C.S.I.; Fellow and Member of Council of the Surgical Section of the Academy of Medicine in Ireland; Fellow of the Royal Medico-Chirurgical Society of London: Vice-President of the University Biological Association of Dublin; Surgeon to the Adelaide Hospital, Dublin.

At the recent International Congress at Copenhagen the first subject discussed in the Surgical Section was the treatment of cancer of the rectum. The discussion showed clearly that the choice of operation depended more upon the nationality of the surgeon than upon the indications presented by the sufferer. Thus, were the latter to present himself at an English hospital, colotomy would probably be proposed as the safest method of affording relief, and early operation would be advised as offering better chances of prolonged life than would be the case if the operation were postponed until the pain and troubles of obstruction had supervened. In France, on the other hand, colotomy would be decried, and rectotomy, or complete division of the malignant stricture and of the sphincter ani, would be substituted for it. Were the patient, however, to seek advice in Germany, he would be told that both these measures were but palliative, and that if he wished for a cure he had come to the right place, for in Germany the cancerous mass would be excised, and a chance afforded him of

[a] Brit. Med. Jour., 29th April, 1882. P. 629.

being quit—it may be for years or it might be for ever—of his disease.

Of late years it must, however, be acknowledged that the operation of excision of the rectum in certain cases of cancer has been slowly but steadily making its way among us, and that at present there are many surgeons in these countries who will not endorse the statement of Mr. Henry Smith, that "this proceeding must be looked upon both as barbarous and unscientific, and it is now, happily, exploded from the catalogues of surgical operations."[a] In discussing the relative value of these three methods of treatment, one important point should not be lost sight of—namely, that while all three aim at relief, excision alone aims higher and tries to cure. It is no argument against excision to urge that it has a higher percentage of deaths to record than can be attributed to either colotomy or rectotomy. There are few afflicted with the disease who would not prefer to run some risk on the chance of being cured rather than undergo an operation, were the mortality attending it even less than it is, with the prospect only before them of being relieved of pain, and of slowly and quietly but surely sinking into the grave within a few months, or at most a few years.

There can be no question then that excision of the rectum would in many cases monopolise the field of operative measures for cancer could it be satisfactorily established that the mortality consequent on the operation were not so high as to be deterrent; secondly, that in a fair proportion of cases recurrence either does not occur or takes place after a sufficiently long interval as to prove a decided gain over what can be obtained with colotomy or rectotomy; and thirdly, that the condition of the patient afterwards is not worse than after either of these other methods. These points can be established only by an examination of the statistics of the results obtained, but in collecting the cases it must be observed that the results of the last few years are much more favourable than those of earlier date, owing to the improvements introduced into the operation itself and also to our better knowledge of wound-treatment in general. In estimating the value of the operation we should be guided more by later experience than by the achievements of former times. In doing so we shall only be following the example set in estimating aright such procedures as abdominal sections, operations on joints, and soforth.

[a] Holmes' System of Surgery. Vol. IV., p. 858. 1870.

The operation of excision of the rectum for cancer was first performed by Faget on the 30th June, 1763, but it was not brought prominently before the surgical world until 1830, when Lesfranc read a paper on the subject before the Académie Royale de Médicine. He was followed by Velpeau in 1851, who published six cases, and by Rizzoli, with four cases. The mortality of these earlier operators was 30 to 50 per cent. In England the operation soon fell into disrepute, and was condemned by many surgeons of eminence, and though it has been to some extent revived in consequence of the support given to it by Sir James Paget, Mr. Allingham, Mr. Morrant Baker, Mr. Cripps, and others, still at the present day there are not a few found to condemn it in as measureless and, I may add, unreasoning terms as those employed by Mr. Smith, which I have already quoted. It is not encouraging to read such words as the following from such an authority as Mr. Curling:—"I am unwilling to discourage any attempt to cure or relieve so dire a disease as cancer of the rectum by excision, but knowing the dangers which must be incurred from hæmorrhage in the operation, the misery likely to ensue from incontinency of fæces, and from contraction in the wound, if healing takes place, as well as the prospect of an early return of the disease, I cannot think that the chance even of a prolongation of life is worth acceptance on the terms offered by such an operation." Let us see, then, in the first place, what is the mortality after the operation. Among the earlier operators it was 30 per cent. In Mr. S. W. Gross' "Surgery" he tabulates 193 cases of excision, of which 39 died, which gives a death-rate of 20 per cent. as a result of the operation; Mr. C. B. Ball has collected 175 cases in his paper, published in the "Transactions of the Academy of Medicine in Ireland,"[a] with a mortality of 16·5 per cent.; Mr. Harrison Cripps tabulates 76 cases, 23 of which were from his own personal experience—these give a death-rate of 17 per cent.[b] The most brilliant statistics are those reported from Czerny's klinik in Heidelberg by Heuck.[c] The record embraces all the cases of cancer of the rectum observed during the years 1877 to 1882, and these are 43 in number. Of these the diseased portions of the rectum were excised in 25 cases, with only one death referable to operation—that is, a percentage of 4.

In order to appreciate such brilliant results, and to learn how

[a] 1885. P. 117.

[b] Diseases of the Rectum and Anus. Cripps. 1884. P. 397.

[c] Archiv für klinische Chirurgie. Langenbeck. 1883. P. 560.

the mortality has been reduced to such a small figure, we must shortly review the causes of death following this operation hitherto. The first thing which we shall observe is the large number of deaths due to causes which are generally recognised to-day as preventable—namely, the absorption of septic matter from the wound, giving rise to pelvic cellulitis, peritonitis, septicæmia, &c. Of the 193 cases tabulated by S. W. Gross, 39 died; of these 19 were from pelvic cellulitis and phlebitis, 11 from peritonitis, 3 septicæmia, 3 collapse, and 1 each from pyæmia, erysipelas, and hæmorrhage. Of Mr. Cripps' 76 cases, 13 died; 8 from peritonitis and cellulitis, and 1 each from erysipelas, pyæmia, shock, and exhaustion, and 1 not stated. With such records before us, we may well anticipate a general reduction in the mortality, similar to that attained by Heuck, by adopting such precautions as the antiseptic treatment of wounds affords. Even in such a situation it is not so difficult to carry out effective antiseptic measures as might at first sight appear.

From these statistics we may gather that the death-rate after excision is not so high as is often supposed, and contrasts very favourably with the immediate results of the mere palliative operations of rectotomy and colotomy.

The second point to be determined is—whether, in a fair proportion of cases, recurrence does not occur, or takes place after a sufficiently long interval as to prove a decided gain over what can be obtained with colotomy or rectotomy. Again, we find that statistics are favourable to excision. In Gross' tables 154 survived the operation; of these 36 were lost sight of, leaving 118 to be accounted for. In 51 of these the disease recurred locally, in 14 it developed in other parts of the body, in 53 the disease did not return, the patients surviving the operation for periods varying from two months to ten years. Six reached the limit of ten years. Again, of these 53, 29 survived the operation for periods exceeding two years, which is the average duration of cases which have not been subjected to operation—that is, of the cases operated upon and whose after-history could be traced, 24·5 per cent. were really benefited. Mr. Cripps' statistics are even more favourable. We find 63 cases surviving the operation; 16 of these were lost sight of, and in 3 the nature of the disease was doubtful, leaving 44 to be accounted for. Twenty-five of these occurred in the practice of others:—"No recurrence had taken place in 11 instances, after intervals varying from a few months to some years. In 3 of the

cases over four years had elapsed without recurrence. In the remaining 14 cases recurrence took place after intervals varying from four months to three years. In some of these the recurrence was of a very trivial nature, and was easily removed by a second operation, while in others the patients died of general cancerous cachexia."[a] Of his own cases 19 survived operation. In 9 the disease returned between four months and two years after the operation; of the remaining 10, 6 were known to have been well at periods of two to four years after excision had been performed. Of the 25 cases reported by Heuck, of which 1 died as a result of the operation, 9 were known to be free of recurrence, and 1 was doubtful; 3 of these were free three years after operation, and 3 after two years.

In the face of such statistics as these, results which no palliative measure could give, we must come to the conclusion that, *when practicable*, we are bound to give patients afflicted with cancer of the rectum the chance either of a cure or of a long period free from recurrence, which excision of the disease offers.

The question now arises—When should we consider ourselves justified in making an attempt to excise the disease, and what are the conditions which render the procedure practicable? In the first place we may observe that the same general principles should guide us in dealing with rectal cancer as those which we follow in dealing with cancer in other parts of the body. "The extirpation," says Esmarch,[b] "must be done as early and as thoroughly as possible. The larger the amount of healthy surrounding tissue which is removed, the more may we hope that recurrence will either not take place or the longer will it be postponed." Involvment of the lymphatics in the neighbourhood is generally looked upon as a bar to operation; but, on the other hand, the lymphatic glands in cancer of the rectum participate in the disease at a very late date, so that even in cases where the disease has lasted for a long time, or is extensive, a successful result may be obtained. In one of Czerny's cases, reported by Heuck, already alluded to, a perfect result was observed four years after operation, although the cancer had existed for three or four years previously. When the cancer involves neighbouring organs palliative measures had better be adopted—that is, colotomy or rectotomy are indicated. In men

[a] Op. loc. cit. P. 399.

[b] Transactions of the International Congress at Copenhagen. 1886. Vol. II., p. 4. Surgical Section.

the prostate may be attacked, but, if it is, it is at a late period of the disease; in women, on the contrary, the vagina and uterus are liable to share in the disease at an early date.

Volkmann and Heuck both consider that extirpation should not be attempted in cases in which the disease extends so high that its upper margin cannot be reached by the finger—that is, when the cancer extends higher than four inches from the anus, but Esmarch says that the whole rectum up to the sigmoid flexure can be removed with good results. Most surgeons, however, we believe, will be satisfied with the lesser limit of Volkmann, than attempt an excision which might involve 20 centimetres ($7\frac{7}{8}$ inches) of the rectum. The fact that Esmarch operates on these more extensive cases, many of which involve the opening of the peritoneal cavity—cases which Heuck considers to be beyond the pale of operative interference—may account for the higher mortality of the former—20 per cent.—over that of the latter—4 per cent. "The opening of the peritoneal cavity," says Esmarch,[a] "cannot be avoided in the higher amputation of the rectum, but, as a rule, peritonitis does not ensue, if the opening which has been made be immediately closed by suture under all antiseptic precautions."

The commonest form of cancer found in the rectum is the cylindrical-celled carcinoma. In Heuck's cases this was the form in 72·2 per cent., and he states that it is this form of cancer which runs a particularly benign course. Trélat, on the other hand, considers that cures occur more frequently in cases where the cancer springs from the anal epithelium (epithelioma) rather than from the rectal. In this respect, he states, it resembles cancer at other orifices of the body—such as epithelioma of the lip, &c.

Another point which it is important to consider in determining the advisability of excision of the rectum for cancer, is this—If recurrence takes place, where is it most likely to show itself? A great deal depends upon the amount of apparently healthy tissue which the surgeon is prepared to sacrifice. Should he commit the error of trying to save too much, he may assuredly look for recurrence of the disease at the site of operation as certainly as if he had been operating for cancer of the breast, or of any other part of the body. But should he not hesitate to cut wide of the disease all round, and to extirpate thoroughly, to the best of his ability—then should recurrence unfortunately take place, it will generally not be in the rectum, as pointed out by

[a] Op. loc. cit.

Volkmann, but in one or other of the viscera; and as the patient sinks under his malady, he will not be haunted by that mental anxiety which would of necessity be present were the disease to show itself in the rectum again.

Without entering here upon the various methods of operating, I shall now detail a case in which I excised three inches of the rectum and the anus in January last (1886), the patient being at the present time (Dec., 1886) in good health and free from any recurrence:—

Case.—A married woman, aged thirty, was sent up to the Adelaide Hospital by my friend, Dr. Blacker Powell, of Roscrea, in the middle of December, 1885, and placed under my care. She had noticed some small hard tumours, "like thimbles," inside the anus, about a year previously. She believed they were piles, as there was occasionally some bleeding, and did not trouble herself about them until latterly, when they seemed to "come down," and to protrude round the anal margin. Pain came on only within the previous two months, and was greatly increased by the motions of the bowels. She then showed herself to Dr. Powell, who, recognising the serious nature of the case, wrote to me, asking that she should be admitted to the Adelaide Hospital. On examination the following condition was observed:—The anus was surrounded by swollen and congested hæmorrhoids, the anus itself being in a patulous condition. The opening was large enough to admit a finger, but the proceeding gave rise to great pain. Accordingly the patient was placed under chloroform and a thorough examination was made. A hard nodulated mass was found to occupy three-fourths of the circumference of the bowel—namely, the anterior, posterior, and right walls; the left wall seemed to be tolerably free. The disease involved the greater portion of the inner aspect of the anus itself, and it could be easily seen that the skin on the right side was becoming implicated. The finger could just reach the healthy bowel above the tumour. A finger passed into the vagina showed, in the first place, that the upper limit of the disease could be reached; and, secondly, that though the anterior wall of the rectum was implicated, the mucous membrane of the vagina was apparently free. The cancer was not ulcerated. As the patient appeared to be in very fair health, and did not exhibit any marked cachexia, I decided to give her the best chance I could by removing as thoroughly as possible the diseased mass. The operation was performed on the 18th January as follows:—A castor-oil draught was administered the night before, and the bowel was cleaned out with an enema in the morning. The patient, being placed under the influence of ether, was brought into the theatre and placed in the lithotomy position. The perineum was then shaved and cleansed thoroughly with

corrosive sublimate solution. A curved incision was made in front of the anus, extending from a point half way between the anus and tuber-ischii on one side to a corresponding point on the other side. Through this incision I was able to dissect the mucous membrane of the vagina away from the anterior wall of the rectum. This was the most tedious part of the operation, owing to the scanty amount of connective tissue. A small opening into the vagina was accidentally made, but this gave rise subsequently to no trouble of consequence. The anterior portion of the rectum being thus separated, I made a curved incision from the central point of the first incision—*i.e.*, just in front of the anus, and carried it round the right side of the anus to the tip of the coccyx. This incision was well curved outwards so as to cut free of the disease which implicated the anus to a larger extent in this situation than elsewhere. A similar incision was made on the left side. The whole tumour was then cleared away from its connections and drawn down, the levatores ani having been completely divided; silk sutures were then passed through the walls of the rectum, well above the disease, for the purpose of drawing it down and retaining it in position. The entire tube was then sectioned below these retaining sutures and the tumour removed. The wound was then irrigated with the sublimate solution, and the inside of the gut thoroughly disinfected. A cone of salicylic wool, previously dusted over with iodoform, was inserted into the gut to act as a plug. The raw surface of the wound was dusted over, and then the gut was carefully sutured all round to the skin. A large drainage tube was inserted in front of the coccyx, between it and the gut, and a smaller one in the anterior angle of the wound. The vagina was similarly disinfected and plugged, the small wound in its posterior wall having been previously sutured. Sal alembroth gauze was applied externally, and a large wood wool pad over all. The dressings were secured in position with a T bandage, and the patient brought back to bed. The subsequent progress of the case was most satisfactory. Opium was administered in the form of pill three times a day to keep the bowels from acting. This had the desired effect. The dressings were changed on the fifth day, and the drainage tubes removed. It was then seen that union by first intention was taking place between the skin and mucous membrane of the rectum. On the tenth day a solid motion was passed, and was removed with the dressings. Union between the skin and mucous membrane was perfect, except in one small spot which was granulating. The skin wounds were also healed, except where the drainage tubes had been placed. These openings gradually filled up, and the patient returned home in February. When she left hospital she had not regained control over the motions, but was obliged to wear a pad. She was quite free from pain and in good health. The tumour on examination proved to be a cylindrical-celled carcinoma.

This case shows that when proper precautions are taken it is possible to obtain union between the skin and mucous membrane by first intention. When this result can be secured it is of great importance, for it obviates one of the objections raised to this operation of excision—namely, the danger of cicatricial contraction taking place, with the result of a fibrous stricture. Many surgeons prefer to leave the wound to granulate, on the grounds thus stated by Mr. Ball:[a]—"If sutured up, the strain is so great that the stitches rapidly cut out; but a very much more serious objection is that by so doing a pouch is found outside the rectal wall, in which, notwithstanding the most careful attempts to drain, fluids are apt to accumulate and become septic." These objections, I believe, are imaginary, for all surgeons are agreed, in the first place, that when the rectum has been divided there is no tendency for the upper portion to retract. On the contrary, it can be drawn down with the greatest ease, and sutured to the skin without any strain at all. In the second place, a large drainage-tube, placed between the rectum and coccyx, is in the most dependent position, and it is difficult, therefore, to understand how sutures placed above this could retain the discharges. My own case shows that this method of drainage is amply sufficient. Volkmann, at the International Congress in Copenhagen,[b] states that he nearly always sutures the rectum, at least anteriorly to the skin, and places a drain posteriorly. Heuck[c] also argues strongly in favour of thus suturing the parts. In the first place, union by first intention can often be procured; and in the next place, even should the sutures give way between the fourth and sixth days, the exposed surface is then granulating and is consequently not exposed to infection, as a raw surface would be, during the passage of fæces. The danger of subsequent contraction is much diminished by thus avoiding the formation of cicatricial tissue to the same extent as if the parts were allowed to granulate. The progress of a case left thus to granulate is thus described by Mr. Cripps:—"The cut end of the bowel quickly forms attachments to the sides of the cavity that remain as the result of the operation, and seems during the process of cicatrisation to be drawn considerably downwards, so that if three inches of the bowel have been removed, and the parts are examined six months later, it will not be found that the gut terminates three inches above the external orifice, but at a distance of one to two inches from it, and that the lining of

[a] Op. cit., p. 119. [b] Op. cit., p. 29. [c] Op. loc. cit., p. 563.

the canal for the remainder of the distance is composed of a tissue similar to the ordinary scar tissue found on cutaneous surfaces, but of a softer consistency. This tissue has sometimes a great tendency to contract, thus narrowing considerably the outlet."

It is sometimes urged as an argument against this operation that the patient is greatly inconvenienced by the loss of the power of control. This equally applies to colotomy, and it is certainly an advantage to the patient to have the fæcal outlet in the position provided by nature. But is this control lost? In cases where the sphincter can be saved, incontinence does not result. This is well illustrated by Mr. Ball's case of melanotic sarcoma of the rectum, in which he excised the tumour, without, however, sacrificing the sphincter, on Nov. 1st, 1884. He informed me the other day (that is, two years later) that there was not the slightest incontinence, and no return of the disease. In the case I have reported above, the entire sphincter had to be sacrificed; but even in these cases very frequently a supplementary sphincter develops, and the patients in time regain control over the rectum.

In a letter dated Dec. 21st, 1886, Dr. B. C. Powell writes:— "There is no return of the disease apparent. The mucous membrane projects a little, giving the appearanee of a slight prolapsus. Her bowels move but once a day, and by wearing a napkin and "watching herself" she does not suffer much incovenience from them. She is in good health and spirits, and has gained weight since she left hospital."

It is now eleven months since the operation was performed, and the result is one which should certainly encourage surgeons, not to condemn such cases too hastily, nor to recommend palliative measures too exclusively.

ART. IX.—*Remarks on the Causation of Pain referred to the Left Side, and of Pain in the Epigastric Region.* By WALLACE BEATTY, M.D., M.K.Q.C.P.I.; Senior Assistant Physician, Adelaide Hospital.

PAINS referred to the left side and to the epigastric region are so frequently met with in practice, and are often so obscure in their causation, that I think the various conditions under which these pains may occur are worthy of investigation.

I may say, at the outset, that I exclude from consideration affections of the thoracic organs.

Having met with a considerable number of cases in which pains in the positions above mentioned were present, I have endeavoured to classify them according to the exact locality of the pains, the difference in their character, and the associated symptoms.

One class of cases very commonly met with, and which, as far as I can ascertain, has not received the attention of writers on the practice of medicine, is characterised by pain in the region of the left lower ribs, and depends usually upon constipation or fæcal accumulation. In a paper read before the Medical Section of the Academy of Medicine in December, 1882, I drew attention to the frequency of left-side pain in constipation, and I recorded a few cases which appeared to be typical examples of this condition. The pain is referred to the region of the lower few ribs on the left side; in character it is sharp, burning, or in some cases dragging; it is combined with tenderness (sometimes extreme) on pressure upwards of the tenth and eleventh left ribs—pressure of these ribs downwards not causing much distress—and there is but slight tenderness (or no tenderness at all) on pressing up a few of the ribs adjacent. Pain is relieved by firm pressure of the side inwards with the flat of the hand. I ascribed this pain to the irritation of the nerves of the pleurocolic ligament by the drag of a loaded splenic flexure (or a part of the colon near to the splenic flexure) upon it. This ligament is attached to the diaphragm opposite the tenth or eleventh rib, and is made tense, owing to its direction upwards and outwards, by pressure of these ribs up; thus pain is increased by this pressure. Pressure downwards of these ribs does not cause much tension, and so little pain; while pressure inwards of the side with the flat of the hand relaxes the ligament, and so eases the pain. The nerves of the ligament are derived from the inferior mesenteric plexus, which plexus receives a large branch from the left lesser splanchnic nerve, not from the right nerve. This nerve—viz., the left lesser splanchnic—arises from the tenth and eleventh dorsal sympathetic ganglia on the left side. I regard, therefore, the pain caused by the drag upon the pleurocolic ligament as in part seated in the nerves of the ligament, but mainly to be a referred pain carried up from the terminal fibres of the left lesser splanchnic nerve in the ligament to the tenth and eleventh left dorsal sympathetic ganglia; thence on to the spinal cord, and then reflected by the law of irradiation of sensations to the tenth and eleventh left intercostal nerves—that is to say, to the nerves immediately connected with the

ganglia. If the irritation is very great other intercostal nerves will be affected as well, just as in disease of a tooth a few branches only of the fifth nerve may be affected at first, but, if the pain in the tooth becomes severe, it may radiate to all the branches of the fifth nerve, and even run down the arm.

On further investigation I have found that in most cases tenderness is felt when pressure is made over the anterior part of the lowest intercostal *spaces*, even without pressure of the *ribs* upwards, and that some tenderness is often (not always) present immediately to left of the lowest dorsal vertebræ—that is to say, two of Valleix's neuralgic points are commonly present; hence the pain is mostly neuralgic, and is a referred pain, as above mentioned.

Possibly pain in the course of the left lower intercostal nerves in fæcal accumulation may not be due in all cases to a drag on the pleurocolic ligament, but may be caused by distension of the splenic flexure or descending colon with fæces, or with gas above the fæcal lodgment. The nerves of the inferior mesenteric plexus which supply this part of the colon, and so some fibres of the left lesser splanchnic nerve in that plexus are irritated, with result that an intercostal neuralgia is produced by a reflected impression from those fibres.

It is most surprising that pain in the region of the left lower ribs has received so little attention at the hands of writers on the practice of medicine. Left-side pain is a symptom which has been almost completely handed over to the gynæcologists as their monopoly. Now, I am fully convinced that in a large number of cases pain in the region of the left lower ribs has no connection whatever with the ovary, uterus, or its appendages. A similar pain is found occasionally in men, and in young girls before puberty. The pain, when not of long standing, is cured by simple purgation.

I may add that when it occurs in young women it bears no relation to the menstrual period, is not necessarily increased in severity during the period, and indeed in many cases menstruation is performed quite normally.

Undoubtedly young women are most subject to this pain—it is rare in men. This may be explained, partly by the comparative rarity of fæcal accumulation to any extent in men, and partly by the fact that men are less subject to neuralgia, Moreover, women affected with this pain are often chlorotic or anæmic—conditions which predispose to neuralgia—while chlorosis and anæmia are uncommon in men.

Middle-aged women are not so subject as young women to the pain, perhaps because the predisposition to neuralgia lessens with age.

With regard to treatment, I think the following points are worthy of attention:—

(1) Simple purgation is generally completely successful within a few days or weeks in those cases in which the pain has been only of short duration, and in which there is no accompanying anæmia.

(2) If the pain has been present for weeks or months, without anæmia, simple purgation may succeed rapidly, but not always.

(3) If anæmia is present, simple purgation will lessen the pain, but tonic treatment will be required as well.

When the bowels have been cleared of accumulated fæces by enemata or strong purgatives (enemata are generally most desirable at first), I have found in many cases cascara sagrada a most admirable drug in ensuring regular action of the bowels.

The following case will serve as an example of pain in the region of the left lower ribs dependent solely upon constipation:—

Case I.—Sarah C., aged twenty, a dressmaker, came to me on August 5th, 1884, complaining of pain in the left side, which had been troubling her for three weeks. The pain was situated in the region of the left lower ribs, and was associated with tenderness. She was constipated; there was no anæmia present; menstruation was normal. Twenty drops of the fluid extract of cascara sagrada, three times a day, was prescribed. On August 21 she told me that the pain was less constant and less severe; after a few days it went away entirely. Cascara sagrada regulated the bowels. She returned on two subsequent occasions several months after suffering from similar pain, which was treated with complete success by simple purgation.

This is a very typical case of pain in the left lower-rib region associated with constipation. The pain was not of long standing, there was no anæmia, and relief was speedily obtained by purgative treatment alone.

Cases which come under the head of so-called "fæcal anæmia"—that is, anæmia due to the malnutrition brought about by constipation—are not infrequently met with; in such cases pain in the region of the left lower ribs is generally a prominent symptom. The group of symptoms commonly met with in such cases is as follows:—

(1) Marked anæmia; not a clear or waxy colour, but a dull, dingy complexion. Anæmia of this kind should suggest the possibility of fæcal accumulation being the cause.

(2) Headache, commonly at the top of the head, but sometimes frontal.

(3) Vomiting after food; a very important characteristic of the vomiting is, firstly, that the nature of the food is immaterial, food of every kind is rejected; and, secondly, that the time which elapses between the taking of food and its rejection is variable; most commonly vomiting occurs immediately after eating, the patient having often to leave the table to reject the contents of the stomach; but it may not occur for half, one, or more hours after. In these two features the vomiting of fæcal anæmia differs from that due to gastric ulcer, which is markedly dependent upon the nature of the food, and which usually takes place about a quarter to half an hour after eating.

(4) Left-side pain in character as previously described.

This collection of symptoms—viz., dingy anæmic complexion, coronal headache, vomiting after food, no matter what its nature, and occurring at variable times, associated with left-side pain and tenderness in the region of the left lower ribs—is almost pathognomonic of anæmia dependent on fæcal accumulation, and calls chiefly for purgative treatment, though tonics, especially iron and arsenic, will be required as well. The following case is illustrative:—

Case II.—S. C., aged twenty-one, a housemaid, was admitted into the Adelaide Hospital on June 4, 1885, with the following symptoms, which had been present for a few weeks:—Headache, most severe at the top of the head, throbbing in character; some frontal pain as well; vomiting after food; pain with tenderness in the region of the left lower ribs, relieved by firm pressure of the side inwards with the flat of the hand; also anæmic symptoms—viz., loss of colour (a dingy anæmia); breathlessness on slight exertion; menstruation regular as to time, but scanty. She was subject to constipation; she had been subject also to left-side pain on and off for years. Enemata were administered with result that an immense lodgment was removed, and the patient experienced marked relief. She gradually regained her health. Arsenic and iron were given for the anæmia.

Pain in the region of the left lower ribs may of course be produced by other causes than constipation. It may be due to rheumatism of the intercostal muscles; it may be due to the pressure of an abdominal tumour—*e.g.*, aneurysm, on the origins of the left lower intercostal nerves; it may be due to spinal or cerebral disease; it may usher in, attend, or follow herpes zoster, or may be referred from some internal organ—*e.g.*, stomach,

kidney, or one or more of the pelvic organs. Each of these affections is usually accompanied by symptoms which lead to a correct diagnosis. The point that I wish specially to emphasise is this, that *the* most common cause of pain in the region of the left lower ribs—a pain frequently met with in hospital practice—is constipation, and not uterine or ovarian trouble.

Female patients are in the habit of using the term "left side" vaguely. There are three distinct localities, each spoken of by them in words "left side," in which pain is often experienced. It is most important for the physician to ascertain in each case that comes before him which place is affected:—

(1) Pain in the region of the left lower ribs with tenderness. The cause, as already stated, is most frequently constipation.

(2) Pain in the region of the left breast, or immediately below it. This pain may be gastric in origin, or it may be intercostal neuralgia referred from some distant part—*e.g.*, the ovary; it may be muscular, or associated with herpes. Constipation is not a usual cause.

(3) Pain in the left iliac fossa. This is commonly ovarian or uterine in origin, but may be due to a loaded sigmoid flexure. I have seen it present associated with palpable fæcal lumps which enemata removed, the pain disappearing with their removal.

Pain in the epigastrium and under the left breast, usually at about the level of the 7th intercostal space towards its anterior extremity, is very common in cases of anæmia, and is at times very severe. It seems to depend upon different conditions in different cases. In some cases it is neuralgic, no doubt dependent upon the malnutrition of the gastric nerves brought about by the impure blood, there being no structural change in the stomach; in other cases it is due to chronic gastritis, in others to gastric ulcer—it may be due to distension of the stomach with gas, from want of tone in its muscular walls; while in other cases it may be due not to any gastric trouble, but to intercostal neuralgia. Intercostal neuralgia may be associated with gastralgia. The treatment of the pain will consequently vary with its cause; in many cases it is by the result of treatment alone that the exact cause can be made out. Constipation plays no part apparently in its causation. I have repeatedly tried to remove the pain by purgative treatment, and have failed. No doubt constipation is often present, but it does not cause the epigastric pain; if constipation is obstinate, it usually produces pain in the region of the left lower ribs, which

complicates the case still further. Pain in anæmia dependent upon simple neuralgia is the easiest to relieve; iron alone, or iron with arsenic, effects a cure. As a rule, it may be laid down that cases of anæmia in which epigastric pain is a marked and distressing symptom, even excluding cases where gastric ulcer is present, are difficult to remedy. Marked pain should make the physician slow in giving a favourable prognosis as to rapidity of cure.

Two distinct kinds of anæmic cases are met with very commonly in young women. In both the patient is very pale, she suffers from breathlessness on exertion, noises in the ears, palpitation, cramp-like pain in the calves of the legs; but in one kind these are the only symptoms present—the tongue is clean, there is often no loss of appetite, no headache, no epigastric or left infra-mammary pain. In the other kind there is often a furred tongue, headache, marked epigastric and left infra-mammary pain. The appetite is indifferent, and occasionally food may be rejected. The bowels may be costive, but purgative treatment, while regulating the bowels, will not give any decided relief to the patient. In the first kind of cases iron will usually bring about a very rapid cure; in a week the patient will begin to feel better, and after a few weeks recovery will be complete. In the other kind there is often great difficulty experienced in the treatment. If iron is given at once, it may disagree. The headache increases, and the epigastric pain also.

As an illustration of epigastric and left infra-mammary pain in anæmia and dependent upon simple neuralgia, I offer the following case:—

Case III.—Miss A., aged twenty-seven, came to me in September, 1884, complaining of the usual anæmic symptoms, with, in addition, pain under the left breast and at the back of the left shoulder. The tongue was clean, appetite fairly good, bowels were regular, and menstruation was normal; she was sometimes troubled with flatulence. Ammonio-citrate of iron was given, with result that she got rapidly well. She remained well for a year, when she fell again into ill health. Her symptoms were—loss of appetite, soreness in the epigastrium and under the left breast and up the sternum. She could not bear her clothes tight; there was no headache; she vomited occasionally; meat made the pain worse; the food she could take best was milk, rice, and eggs. On examination there was some tenderness in the epigastrium, and also in the fore-part of the seventh left intercostal space, and to left of corresponding dorsal vertebra. The pain, though more or less constant,

usually became severe at 2 p.m., and lasted so till 2 a.m. She found that her best position was with the shoulders raised, and leaning against a support. She was rather anæmic in appearance, and had an anæmic venous murmur in neck; bowels were rather costive; tongue was fairly clean. The treatment adopted at first was directed entirely to the digestive organs. I gave pepsin and hydrochloric acid with nux vomica after food, and, as a purgative, aloes and euonymin with hyoscyamus. After a few days, as there was no improvement, the stomach was given almost complete rest; the patient was fed by nutritive enemata, ice alone being allowed by the mouth for the first few days, and then a little milk and beef-tea. This treatment failed entirely, the pain continued, and she became extremely weak. I then allowed her to return to food by the mouth, gave her in addition to ordinary food hydrochloric acid beef-juice, and prescribed iron and arsenic. She began to improve very quickly, and after a few weeks regained her health.

It will be observed that in this case the epigastric and left infra-mammary pain was not relieved by giving the stomach complete rest, but that tonic treatment brought about recovery. The seat of the pain seems to have been chiefly gastric, for it was experienced in the region of the stomach, was on some few occasions associated with vomiting, and was certainly (before her admission into hospital) made worse by meat. There was, I think, present also neuralgia in the course of the 7th left intercostal nerve, for not only was there tenderness in the fore part of the 7th space, but also behind to left of corresponding dorsal vertebra. That it was not due either to gastritis or to gastric ulcer seems pretty clear by the result of treatment, as the pain was not relieved when the stomach was given rest. It was probably neuralgic, the gastric nerves being in a state of irritation, brought about by malnutrition. It may be noted that the pain, while more or less constant, became severe in paroxysms, which usually commenced at 2 p.m.

If epigastric and left infra-mammary pain is due to gastritis, or gastric ulcer, it is absolutely necessary to attend to these complications first before giving iron for the blood condition. Such cases usually require rest in bed, and more or less complete rest to stomach. When some food can be tolerated by the stomach, hydrochloric acid beef-juice will be found very useful; it is generally well borne by the stomach, and is an excellent tonic.

I shall now briefly allude to conditions other than anæmia in which epigastric and left infra-mammary pain is met with:—

Acute Gastritis.—The diagnosis is usually readily made. Acute

onset, burning epigastric pain increased by food, vomiting, tongue loaded or unduly red, and, as a rule, an obvious cause, make the recognition of the case easy. However, cases vary greatly in severity, and consequently the symptoms may be more or less pronounced.

Chronic Gastritis.—It is not by any means always easy or possible to distinguish simple chronic gastritis from gastric ulcer complicated with gastritis, nor indeed to decide whether or no chronic gastritis is present. An impaired appetite, epigastric pain—not severe, in character raw or burning, increased by food, especially by hot kinds of food—a feeling of nausea, but seldom vomiting, are a combination of symptoms commonly met with.

Gastric Ulcer.—In typical cases we find pain often exceedingly severe, cutting, increased by food, especially by solid food, the pain situated in the epigastrium and passing back between the shoulders, epigastric tenderness, frequent vomiting occurring shortly after food, when pain has reached its acme, with occasionally copious hæmatemesis. After vomiting, relief; relief also experienced by giving rest to the stomach, and often, also, when patient assumes a certain position, the position depending upon the seat of the ulceration. The diagnosis in some cases is attended with very great difficulty, owing to the vagueness of the symptoms.

Gastric Cancer.—Epigastric pain, in a person advanced in years, coffee-ground vomit, cachectic look, emaciation, and, what is very important, as Leube points out, the presence of a palpable tumour, are some of the diagnostic features.

Gastric Neuralgia.—The pain occurs in paroxysms, often of great severity; it is situated mainly in the epigastrium and below the left breast; when intense, it may radiate to other parts, such as along the intercostal nerves, and down the arm. The time of the paroxysms varies; they may come on after food, but do not bear a definite and constant relation thereto. Commonly the pain comes on at a regular hour each day—*e.g.*, in the afternoon, or at night. There is no evidence of organic change in the walls of the stomach, nor any reason to suspect an abnormal condition of its secretion.

Gastric neuralgia may be divided into three classes—

(1) Neuralgia dependent upon an abnormal condition of the blood—*e.g.*, neuralgia which occurs in anæmia (previously alluded to), or in malarial poisoning, or gout.

(2) A referred pain—*e.g.*, gastralgia may be referred from the genital organs, as in Niemeyer's remarkable case recorded by Leube, where gastralgia occurred regularly every four weeks in

place of the menstrual discharge, and could be excited by the application of leeches to the cervix uteri. The patient had retroflexion of the uterus and erosions of the cervix.

(3) No definite cause discoverable; this class may be called idiopathic gastralgia.

Cases are met with in regard to which it is very difficult to say whether they are instances of gastric neuralgia, or whether a gastric ulcer is present. The pain may be worse after food, but comes on also at other times, may be associated with vomiting which does not bear any constant relation to food; there is neither hæmatemesis nor melæna. Three or four days' complete rest to the stomach may be followed by complete relief. Leube considers that an important diagnostic feature of neuralgia is the marked relief which is commonly experienced by the application of the galvanic current.

Cases of epigastric pain are met with in which the pain comes on a few hours after food—that is, when gastric digestion is over, and which is relieved either by the introduction of more food, or by alkalies. Possibly there is in such cases an excessive secretion of gastric juice, which is relieved either by the introduction of food, or by neutralisation.

Gaseous distension of the stomach may cause pain in the epigastrium, and also between the shoulders.

Intercostal Neuralgia.—The diagnosis between gastralgia and intercostal neuralgia affecting the intercostal nerves, which terminate in the epigastric region, is usually easy. In intercostal neuralgia the presence of tender points in the usual places, and the absence of stomach symptoms, are diagnostic. However, gastralgia and intercostal neuralgia are often associated.

The causes of intercostal neuralgia may be classified thus:—

(1) Dependent on a blood condition.

(2) Referred pain.

(3) Produced by pressure.

(4) Associated with herpes.

I may say, in conclusion, that I do not pretend to have given an exhaustive account of left side and epigastric pain; my object is to call attention to some points which I think are of special importance in the differential diagnosis of the pains commonly met with in these regions. I desire to lay stress specially upon the part played by constipation in the production of pain in the left lower rib region.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Principles and Practice of Medicine. By the late CHARLES HILTON FAGGE, M.D., F.R.C.P.; Physician to, and Lecturer on Pathology at, Guy's Hospital; Examiner in Medicine in the University of London. Edited by P. H. PYE-SMITH, M.D., F.R.C.P.; Physician to, and Lecturer on Medicine at, Guy's Hospital. London: J. & A. Churchill. Vol. I. Pp. 1,024. Vol. II. Pp. 836. 8vo. 1886.

A POSTHUMOUS work from the pen of so erudite a physician as the late lamented Dr. Hilton Fagge must needs command attention. During twenty years the author held office in Guy's Hospital—first as Medical Registrar, then as Pathologist, and lastly as Physician; and in the two massive octavo volumes—which make up the work under review, and which contain eighteen hundred and sixty pages—are included the results of his ripe experience in the wards and in the deadhouse of the great metropolitan hospital he so long and so faithfully served.

In Dr. Pye-Smith's preface to his friend and colleague's Treatise on Medicine, we are told that the writing of the work occupied Dr. Fagge's best energies for more than twelve years. At the time of his premature death, on November 18, 1883, only two sections of the treatise remained unfinished—one was that on Diseases of the Heart, which Dr. Wilks has completed by a monograph on "Affections of the Valves;" the other was intended to be devoted to the important topic of "Cutaneous Disorders," and this the editor has himself supplied at the close of the second volume.

Dr. Fagge was born in 1838, at Hythe, where members of his family had practised for two generations. His university career was most distinguished—probably no such wealth of honours has fallen to the lot of any other graduate of the University of London before or since. In 1864 he became a Member, and in 1870 a Fellow, of the Royal College of Physicians of London. He was elected Assistant-Physician to Guy's Hospital in 1867, and after

thirteen years of active clinical work, he was made full Physician in 1880, in succession to Dr. Habershon. By degrees he accumulated a rich collection of pathological and clinical notes at the same time that he was a prolific writer. "In all this," wrote Mr. John Marshall, in his Presidential Address before the Royal Medico-Chirurgical Society in 1884, from which we have culled the foregoing information, "we have signs of indefatigable mental energy, proof of great preparedness for teaching, security for winning confidence as a consultant, and a promise of the most substantial success. The formation of a thoracic aneurysm, accompanied by aortic valvular disease, and their inevitable consequences, destroyed these bright prospects."

Dr. Fagge died on the 18th of November, 1883, and soon afterwards Dr. Pye-Smith was asked, and consented to complete and edit the "Treatise on Medicine," on which he had been at work up to the last. This labour of love occupied some eighteen months, and the treatise was published at the beginning of the past year (1886). The plan of the work is as follows:—The first volume opens with an introductory chapter, in which Disease is defined as "the opposite of *Health*, a derangement of structure or of function in some part of the body, or in the whole of it, causing pain or discomfort, or tending to shorten life." In this chapter, also, Pathological Anatomy and Clinical Characters are considered as bases of Nosology; physical signs and subjective symptoms are defined and explained; general ætiology is described under the headings "exciting" and "predisposing causes" of disease. The term "Prognosis" is explained, and the modes of dying are enumerated and described—namely, by paralysis of respiration, by asphyxia, by syncope, by hæmorrhage, and by asthenia.

The first part is devoted to a consideration of "general morbid processes"—such as contagion, fever—or, more strictly speaking, pyrexia—inflammation, tubercle, tumours, or new growths, and syphilis. The next part deals with "specific diseases," or those which affect the whole body, run a definite course, arise by contagion, and are usually accompanied by pyrexia. Under this heading we have descriptions of typhus, relapsing or famine fever, enteric or typhoid fever, scarlatina, Rötheln (or rubeola, epidemic roseola), measles, smallpox, chicken-pox, ague, dengue, yellow fever, erysipelas, diphtheria, cholera, the "Plague" (Pestis), and the epizootic diseases affecting man—that is, glanders, anthrax, and foot-and-mouth disease.

In this portion of the treatise there are some points which call for a more or less adverse criticism. And first, we join issue with the author as to the propriety of representing "Pyrexia" and "Fever" as synonymous and even convertible terms. The latter word has long since come to be used in a more definite and restricted sense—as a generic term applicable to a group of specific diseases, characterised by pyrexia amongst many other symptoms. The distinction we wish to insist upon is accurately conveyed by the two Greek words πυρέσσω (fut.: πυρέξω, hence *pyrexia*) = "to be feverish," "to be in a fever," and ὁ πυρετός = "fever" (*Latinè*, "febris"), an essential disease. One of the aphorisms of Hippocrates runs thus:—

> "Πυρέσσοντι ἱδρὼς ἐπιγενόμενος μὴ ἐκλείποντος τοῦ πυρετοῦ, κακόν."

"Perspiration occurring in a feverish patient, the fever not ceasing, is a bad symptom."

The Father of Medicine, we take it, here refers, not to the symptom—*pyrexia*, but to the disease—*fever;* and our experience of typhus specially proves the truth of the aphorism, for a patient will die after profuse sweating in a pseudo-crisis. The late Dr. Murchison put the matter more clearly and more correctly when he wrote—"The term Fever or Pyrexia is employed in two very different senses: first, to express that group of general constitutional symptoms which accompany local inflammations; and, secondly, to denote a similar group of symptoms, which, though occasionally complicated with local inflammations, are independent of them, and result from the absorption of some poison into the system from without, or from the action on the nervous system of a non-specific cause. In the former case, we say that the fever is *symptomatic;* in the latter *idiopathic* or *essential*."[a] According to our view, this definition would be absolutely correct, were the word "fever" replaced by "feverishness"—the exact English rendering of Pyrexia. "Fever" would then be restricted in its application, serving as a generic term to describe a group of diseases, including three great species—the Continued, the Eruptive, and the Intermittent Fevers.

Making allowance for this want of logical precision in the use of the term fever, we have nothing but praise for the manner in which the author deals with the theory of Pyrexia, in treating of

[a] A Treatise on the Continued Fevers of Great Britain. By Charles Murchison, M.D., LL.D., F.R.S. Third Edition. Edited by W. Cayley, M.D., F.R.C.P. London: Longmans, Green & Co. 1884. Page 13.

which he adopts Liebermeister's views. He concludes that "pyrexia cannot be due to any special rate of heat-production, but must depend upon an alteration in the point for which heat-regulation is set." (Page 43). And, in briefly discussing Subnormal Temperature, he adds—"It is an interesting question whether the temperature of the body ever undergoes a change in the direction opposite to pyrexia, the heat-regulation centre being set a point below the normal instead of above it." (Page 46).

Following the chapter on Pyrexia, come a series of the most interesting sections of the work—on "Inflammation," "Tubercle," "Tumours," and "Syphilis," respectively.

In the first of these we meet with the following most clear and graphic account of Cohnheim's theory of inflammation :—

"In those countries in which Cohnheim's experiment is not forbidden by law, it is performed in the following manner :—A male frog, which has been rendered quiet by curare, has an incision made into the abdominal cavity, large enough to allow a loop of intestine to be drawn out with its mesentery. It is then placed upon its back on a broad glass plate, which has been fitted with a thin glass disc for the convenient reception of the mesentery, and with a semicircle of cork to which the intestine is to be pinned. Under the microscope, the circulation can now be seen to go on naturally. But the contact of air appears to act as an irritant, and inflammation soon sets in. In from fifteen to twenty minutes the arteries are observed slowly to dilate, until at the end of an hour or two their diameter is nearly twice as great as before. A little later, a similar change begins in the veins. At first the blood-stream perhaps flows more quickly than before, but very soon its rapidity begins to diminish, so that the oval red blood-discs can be distinctly seen in the arteries, at least during the diastole. A striking change is now noticeable in the veins. Leucocytes begin to fall out of the middle of the current and loiter against the sides of the vessel, rolling over and over, and sticking from time to time, when their soft substance yields to the pressure of the fluid upon them so that they become pear-shaped. Before long, the channel of the veins becomes lined by a thick layer of these bodies, which altogether cease to move, while the central current of red discs goes on as before. In the capillaries, too, the leucocytes are arrested here and there; but between them there are seen many red discs also adhering to the walls. But the most wonderful thing of all is that outside the contour of these vessels there gradually appear a number of minute rounded bodies, each of which is connected with a leucocyte within. Thus the leucocytes may be said to have assumed a dumb-bell form. By an imperceptible process, the extra-vascular parts of them

keep growing bigger, the intra-vascular parts smaller, until at length the latter altogether disappear, whereupon the leucocytes resume a more or less globular shape: they now lie close to the vein, but outside it. In the capillaries red blood discs, as well as leucocytes, pass out. The result is, that large numbers of leucocytes are soon collected not only in the immediate neighbourhood of the vessels, but in all the interstices of the surrounding tissues. At the same time a quantity of fluid exudes, which reaches the free surface of the mesentery and coagulates there, forming a membranous layer, itself thickly set with leucocytes. The separation of the leucocytes from the red discs flowing through the mid-channel of the veins, and their loitering against the sides of these vessels and of the capillaries, are direct physical results of the slowing of the blood-current. The process of *emigration* must be referred to the power of spontaneous locomotion possessed by the leucocytes themselves. It seems, however, to depend to a certain extent upon their being under pressure from the blood, for Cohnheim has observed that it instantly ceases when the flow of blood through the main artery of the part is arrested. But, on the other hand, it is not due solely to blood-pressure, for this is actually less than under normal conditions where no emigration seems to go on, at least in the case of tissues which are not in an embryonic state." (Pages 49 and 50.)

Speaking of "Tubercle," the author says that his views are entirely in accord with the doctrine of Laennec as contrasted with that of Niemeyer. The former taught in 1819 that "the existence of tubercles in the lungs is the cause, and constitutes the true anatomical character of Consumption;" the latter, writing in 1867, held that, in the majority of cases, tubercles, if found in the lungs after death, "have been of recent origin and have complicated the disease when it was already in an advanced stage." Tuberculosis may be regarded as a modification of the inflammatory process.

In the section on "Tumours," we are given Virchow's characteristics of malignancy—namely: (1) The *local progression* of a new growth, its tendency to increase by extending into the tissues around it. (2) Its *tendency to return in loco* after having been extirpated by the surgeon. (3) Its *spreading to lymph-glands.* (4) Its *becoming generalised—i.e., spreading to distant organs and tissues by infection of the blood*, or, as it is termed, by "*metastasis.*" In a very interesting way, Dr. Fagge explains the different meaning of the terms "Homologous" and "Heterologous" as applied to new growths by the earlier pathological histologists and more recently by Virchow. While recognising the difficulty of framing a satisfactory classification of tumours, he adopts an arrangement,

which is very like one proposed by Lücke, in Pitha and Billroth's "Handbuch der Chirurgie." It is as follows:—

"I. Cystic Tumours.
"II. New Growths proper.
A. Of connective-tissue type.
(*a*). Normal or fully developed—
1. *Fibroma;* 2. *Lipoma; Enchondroma;* 4. *Osteoma.*
(*β*). Embryonic—
5. *Myxoma;* 6. *Sarcoma.*
B. Of the type of lymph-glands.
7. *Lymphoma.*
C. Of epithelial type.
8. *Papilloma;* 9. *Adenoma;* 10. *Carcinoma.*
D. Of the type of higher tissues.
11. *Angioma;* 12. *Neuroma.*"

The Carcinomata he subdivides into (1) Simple Carcinoma; (2) Keratoid Carcinoma, and (3) Columnar Carcinoma. The first affects glandular organs and mucous surfaces in general, the second affects the skin and mucous membranes lined by laminated pavement-epithelium, and the third, mucous membranes lined by columnar epithelium.

Time and space would fail us in the attempt to do justice to the excellent section on "Syphilis," to which we must direct the reader's most earnest attention.

The chapter on "Typhus" is very good. We observe that the author is disposed to reject the doctrine of the two-fold origin of this fever by contagion and "*de novo*," on the ground that the instances of the latter mode of origin which have been adduced admit of another explanation. He acknowledges, however, that a view which has been endorsed by such authorities as Murchison, Virchow, and Hudson (of Dublin) is deserving of all respect. For ourselves, we are strongly inclined to the opinion that the poison of typhus may in some rare cases be spontaneously generated.

Be this as it may, Dr. Fagge rejects almost with scorn the corresponding theory as applied to typhoid fever. In discarding this term as equivocal and adopting in its place that of "enterica," adopted by Dr. Wilks, he remarks, "Murchison proposed as an alternative name 'pythogenic fever,' *but this has met with very little support, and it involves an erroneous ætiological theory.*"

This is not the place for a polemical discussion, but we venture to submit that strong arguments might be advanced in support of

the view that the poison of enteric fever may at times be spontaneously generated, and that the term "pythogenic fever" has much to commend it to the student of ætiology of disease.

We cannot agree with Dr. Fagge in his conclusions regarding Rötheln, which according to him is *possibly* a variety of measles. The chapter in which he discusses the question is interesting as illustrative of the scepticism which results from being asked to believe too much. He contrasts the strangely incongruous descriptions of Rötheln—one given by Paterson in 1840, and adopted by Aitken, and the other by Thomas, in von Ziemssen's "Handbuch"—and practically admits that they shake his faith in the separate identity of the disease as one *sui generis*. But the fact is that the "Rötheln" of Paterson and Aitken is not Rötheln at all. We say this deliberately, and with a not inconsiderable experience of the disease.

As an instance of the unevenness with which some topics are dealt with, we may mention that on page 233 of the first volume the important subject of the complications of smallpox is dismissed in three lines of letterpress, while the treatment of the same disease occupies just five lines.

Throughout the work, and especially in the Index, appended to the second volume, several typographical errors have crept in—such as "Dr. Alley" for "Dr. Duffey," "Robert Collins" for "Edward Wolfenden Collins," "Dr. Foote" for "Dr. Foot," "Dr. George Harley" for "Dr. John Harley." At page 165 of the first volume, "schizomycetæ" takes the place of the correct form "schizomycetes."

While making these strictures, let us not be misunderstood. The work is an English classic, and will for all time enhance the reputation of the author as a physician, an original thinker, and a close and accurate observer. Had his life been spared, Dr. Hilton Fagge would doubtless have reached the summit of professional fame—as it is, his great treatise remains a monument more enduring than fame.

J. W. Moore.

Laurviks Svovlkilde og Jod-Svovl-Bad, Jernkilder og Vandkurandstalt. Af DR. J. C. HOLM. Kristiania: Det Steenske Bogtrykkeri.

Sulphur Spring and Iodine-Sulphur-Bath, Iron Springs and Water-Cure Establishment of Laurvik. By DR. J. C. HOLM. Christiania: Steen's Book-Printing Press.

LAURVIK is situated on the western side of the commencement of the great fiord which leads up to Christiana, the capital city of Norway. It lies in a deep indentation of the pine-clad mountains which surround it on the northern, eastern, and western sides, leaving it completely open to the sea, which has not yet adopted the brackish quality of the Baltic, but consists of sea brine of strength rather beyond the average. The summer climate of the town is therefore equable, warm, and soft; and during the cure season, which lasts from May to September, simply delightful. The temperature is balmy, but not relaxing; and there is, practically speaking, perpetual daylight, for it is difficult to apply the term "night" to the few hours of twilight which do duty for night during the Scandinavian summer. The town is built upon gravel, evidently the *detritus* from the surrounding hills. This porous soil upon a sloping rocky substratum secures complete drainage, so that even after heavy rains the roads become immediately dry. In addition to these ordinary requisites of a sanitarium, Laurvik possesses some useful mineral springs of a saline and of a chalybeate character, which were carefully analysed by Professor Waaga in 1877. The first of these is the Josephine well, which discharges from the earth 105 litres per minute of a saline, alkaline, and sulphurous water, at a temperature of 8·9° C. This water presents no trace of iron, and in chemical composition occupies an intermediate place between the springs of Weilbach and those of Aix-la-Chapelle. It is highly charged with carbonic acid gas, and is not disagreeable in taste; and is the only spring of the kind which has yet been discovered in Scandinavia. It is employed for drinking, gargling, nose douche, mouth spray, and for bathing; and is stated to have an almost specific effect upon chronic catarrh and irritation of mucous membranes. This is remarkably shown in affections of the bladder and urinary passages, in which it acts very much like the Contrexèville water. It has a highly diuretic (Urindrivende, *literally* urine driving) and diluting property, and appears to increase the elimination power of the kidneys; and is

consequently found beneficial in gravel, gout, and renal obstruction. The nose douche, gargle, and pharyngeal spray are employed with success in chronic mucous irritation of these localities; and for chronic skin diseases a combination of drinking and of bathing is resorted to. In the baths, by an ingenious contrivance, the water can be introduced into the basin at any required temperature without previous contact with the atmospheric air. There are several chalybeate springs which, according to Professor Waaga, "can compete in point of strength with the best springs existing in this group." They contain ferrous carbonate, and are employed in the usual diseases, and with the usual results.

A feature at Laurvik are the mud baths, and the treatment by mud massage, followed by a bath of mud and sea-water, or of strengthened sea-water only. This unctuous mud is procured from the small fiord leading up to Laurvik, and consists of a very fine homogeneous clay, very much impregnated with the products of sea-weed decomposition. It has a distinct sulphurous smell, and is strongly impregnated with sodium iodide and bromide. It is kept warmed for use in large air-tight reservoirs. In the massage treatment it is well rubbed into the whole surface of the body, so as to thoroughly clear the pores of the skin, to remove *effete* epidermis, and to induce to the surface a determination of blood favourable to the absorption of the active ingredients which the mud contains. The patient is now douched, and placed in a warm bath of sea-water and mud, or else of sea-water which has been strengthened by filtration through the ashes of sea-weed. The mud is also employed as a hot poultice, and admirable results are stated to be obtained in chronic skin diseases and in some abdominal and uterine affections. There are also baths of fir leaves.

Turning to the economic aspect of Laurvik, lodgings are clean and comfortable, and the dietary plentiful and of good quality; and the cheapness of both will rather astonish the visitor whose experiences are founded upon the more beaten tracks of European travel. The markets and restaurants are in the official charge of the Medical Direction ("under Laegen's Control"), which is presided over by Dr. J. C. Holm, of Christiania, and Dr. Stephansen, of Laurvik. Numbers of excursions can be made through the most picturesque scenery, either by road or else through the fiords, in those little steamers which are such a speciality in Scandinavian travel. Last, and not least important, Laurvik is not difficult of access. The visitor arriving at Christiania by the South Norwegian

railway can reach it in five hours by the steamer which plies in the fiord. The journey from Copenhagen or from Frederickshavn occupies about ten hours, and from Hamburg double that time. Laurvik has some distinctive beneficial features, and will, no doubt, when better known here, be extensively resorted to.

F. J. B. QUINLAN.

The Hygiene of the Eye in Schools. By HERMANN COHN, M.D., Professor of Ophthalmic Science in the University of Breslau. An English translation. Edited by W. P. TURNBULL, formerly Fellow of Trinity College, Cambridge, and afterwards Fellow of St. Catherine's College, Cambridge. London: Simpkin, Marshall, & Co. Birmingham and Leicester: Midland Educational Co. April, 1886.

THE original work, of which the volume before us is a translation, was published in 1883, and bore the following motto, borrowed from Donders, on its cover:—"Jede progressive Kurzsichtigkeit ist für die Zukunft bedenklich." Progressive shortsight is in every case ominous of evil for the future. This is the keynote of the whole matter treated of in the book.

The introductory chapter opens with a quotation from the pen of Albricht von Graëf:—"It is hardly possible for those who are in the possession of strong, healthy sight to estimate at its full worth the part which the eye plays in the development of the mental powers, in forming our views of the world around us, and in the relationships which exist between man and man. Orators have praised the eye, poets have sung to it, but its full worth lies hidden away in the silent yearnings of those who have once possessed, and now have lost, its light." The author holds that "it is the school itself that must incur the reproach of contributing, together with other factors, to the ruin of many an eyesight," and pleads that "as teachers are entrusted with the care of not only the mental but also the physical health of their scholars, and that for very many hours in every year, parents have surely a right to demand that their children, who are compelled by law to attend school, should not suffer injury by that attendance."

Chapter I.—Prefatory anatomical remarks. "Only those facts," he says, "are introduced which are unquestioned or require further comment or explanation." We regret that this chapter, and chapter

III. on "Accommodation," are by no means free from obvious errors both of anatomy and translation. Written, as it expressly is, for the use of non-medical readers, the anatomical details seem quite needlessly minute even in the original, and when a mass of unmeaning mistranslations are superimposed, the result is far from satisfactory. For example (at page 10) the 10th layer of the retina is called "the *epithelium or hyaloid membrane.*" For this error we find no equivalent whatever in the original. Page 12—"The margin of the lens, called the equator, is laminated; it possesses a skin and a nucleus, and can to some extent alter its shape." Page 14—"The eye can move without altering its place—it is simply turned in any direction upon its *pivot*, which is situated at about the centre of the eyeball" (Drehpunkt—centre of motion, turning-point, pole—is the word in the original). How unfortunate, therefore, is the choice of the word pivot! Again, at page 14—"The eyelid has a thin *lining* called the tarsus" (Knorpelplatte—plate of gristle—in the original).

The worst mistake in the whole book is at page 23, where, speaking of the accommodation of the eye, it is stated that "there exists a *muscle* at the margin of the lens which, by contracting, flattens it permanently, so as to throw upon the retina the impression of distant objects. This muscle, which surrounds the lens in radiating folds not unlike a frill, is called the *Zonula Zinnii or ligamentum suspensorium lentis.*" In the original "Zugkraft" (traction force) is the word which has been translated "muscle" in the beginning of the sentence. And at the end of this chapter, as if to insult the intelligence of those who failed to comprehend the description given above, it is stated "that it is impossible to lay too much stress upon the right understanding of this mechanism of accommodation."

Throughout most of the book the word ophthalmic is spelt omitting the first "h".

We cannot therefore congratulate either the translator (whose name is carefully suppressed) or the editor, who should have discovered many of the inaccuracies before committing the book for the approval of the public. Chapter IV. deals with "Acuity of Vision;" Chapters V., VI., and VII., with Refraction in general, and its special forms, Hyperopia and Myopia, are worthy of small comment, and terminate with the statement, with which we entirely agree, "that protracted near work with a bad light is one of the circumstances most favourable to the origin and

development of short sight;" Chapter VIII. concerns the "Refraction of the Eyes of School Children."

Professor Cohn examined the eyes of 10,060 school children, and from these and other reliable statistics concludes that—(1) "in village schools the percentage of short sight is very low, while in the town schools the number of short-sighted scholars constantly increases with the grade of the school—from the lowest grade to the highest; so that the number of short-sighted children is in direct relation to the length of time during which the children's eyes are worked;" (2) "In every school the number of short-sighted children increased from class to class;" (3) "that more than half of the highest class were short-sighted;" (4) And that "the average degree of Myopia rises constantly from the village schools to the Gymnasia."

Chapter IX. discusses the "amount of Myopia amongst School Children of different Nations;" Chapter X. is on the "Influence of Heredity on the Short Sight of School Children;" Chapter XI. is on "School Desks." This, in the opinion of the author, is a most important subject. The ill effects of bad desks and seats is described, and the various means of obviating them, and the mechanism of the malpositions resulting is fully discussed and illustrated with drawings, both from an orthopædic and an ophthalmic standpoint.

Since the publication of Dr. Cohn's important work in 1867, on "Examination of 10,860 School Children's Eyes," a whole school-desk industry has arisen. In the Paris Exhibition of 1867 only three different models were shown. At Vienna, in 1873, there were 47 different kinds of desks, and at Paris, in 1878, as many as 71 were exhibited. The chapter concludes with a statement of the three main points to be attended to in seating scholars at home or in school:—

1. The seat must be of such a height that its vertical distance from the table equals the distance of the elbow from the seat-bones, *plus* 2 inches.

2. The chair must be pushed so close up to the table that the upper edge of the table overhangs by 2 inches the fore-edge of the chair.

3. A footstool must, if necessary, be used, so placed that the foot rests flat upon it, while the knee is bent at a right angle.

Chapter XII. concerns "Straight Holders"—Geradhaltern—mechanical contrivances to prevent the child assuming a faulty position while writing. Numerous and complicated are some of these

instruments of torture, but the "Face-rest," invented by Kallman, of Breslau, is the one recommended by the author, who adds :— "I never allow my own children to write without it, whether at home or in school, even when sitting at the best possible desk." Many children will, no doubt, rejoice that they are not taught writing by Dr. Cohn.

Chapters XIII. and XIV. concern the lighting of school-rooms, and these are probably the most valuable chapters in the book. He says, and with this we thoroughly agree, "There can never be too much light in a school," and again, quoting from Javal, "The school must be flooded with light, so that the darkest place in the class may have light enough on a dark day," and proposes as a guide that for every five square feet of floor in the room, there should be at least one square foot of glass in the window, and this proportion to be increased if the situation of the school was such as to have bad light outside from high buildings too close, &c.

The ideal school-room, from an oculist's point of view, should have a glass roof, but if that could not be had, the light should fall from the left side of the writer. He found that the narrower the street in which the school-room was situated, the higher the opposite houses, and the lower the story on which the lessons were given the more numerous the cases of myopia among the elementary scholars.

In order to test and record accurately the amount of light in different parts of each room, Professor Weber introduced as a standard of measurement the *metre-candle*, that is, the amount of brightness of a paper held fully exposed to a *normal candle* at one metre distance. The normal candle being a candle of spermaceti or stearine, of the size which has six to the pound. He further invented a photometer, consisting of a fixed horizontal tube containing a normal candle, and at right angles with this a movable tube which admits the daylight, or other light to be measured. In each tube the light falls on a milk-white glass diaphragm. By means of a prism in the tube the light from the normal candle is altered in direction, so that the observer, looking into the movable tube, sees a disc, one half of which is illuminated by a known light (the candle), the other by the light which is to be measured. The adjustment is made by means of plates of white glass of known opacity. By this instrument the light at any scholar's place can, in a minute, be tested, and so, Dr. Cohn says, begins "a new era in the science of school-lighting." The price of the photometer is £15. Weber

has also invented an instrument called a stereogasiometer, or solid angle measure, for registering the amount of the sky visible from any given place in a room. This is done by means of a sort of camera which forms a picture on a graduated scale.

It is recommended that dark school-rooms, where additional windows cannot be constructed, should be lighted by means of large mirrors fixed outside to reflect the light, a contrivance adopted with success in the lighting of offices in London and elsewhere. Dr. Cohn fixes 10 metre candles as the *minimal* light which ought to exist in the darkest place in a class-room. In artificial lighting, also, he fixes the same minimal limit, and strongly advocates the introduction of the electric light on ophthalmological and hygienic grounds.

Chapter XV. is on "Handwriting," and a plea is made in favour of the rounded Latin handwriting as against the pointed German, which latter he considers as an "Unhappy gift of the middle ages."

Chapter XVI. is on "Slates and Blackboards," for both of which he has a bad word, preferring that writing in black on white should be substituted for that of white or gray on black. The remaining Chapters are on "Writing, Drawing, and Hand-work Lessons," "Print and Paper," "Spectacles," "Overworking the Eyes," "Diseases of the Conjunctiva," "The School Doctor," and "Conclusion." In the footnote at page 199 it is stated that "Weber found that the average number of letters read in one minute was as follows:—Aloud, 1,464; silently, 1,900; that is, per second 24 letters aloud, and 31 silently. It takes, therefore, 0·0316 of a second to recognise a letter, and 0·0409 of a second to pronounce it." This calculation seems to us to be faulty, in that it is *words* and not *letters* that are read and pronounced. The word consists of letters, but is recognised as a whole, not as a series of letters, except in the case of the veriest beginner in reading. He goes on to say, "The difference, 0·0093 of a second, therefore expresses the time required, under the guidance of the impression produced by the printed symbol, for setting free the mechanism of the organ of speech." Surely, in reading aloud, each letter is not separately pronounced, and it is the number of *words* and *syllables*, not of *letters*, that have to be taken account of.

Dr. Cohn protests strongly against needless overworking of young eyes, and says, "wholly indefensible is the practice of giving, as a punishment, passages to be copied out many times over," and the appointment of medical inspectors of schools is strongly advocated.

We hope that the publication of this book in English will give an impetus to school hygiene in these countries, and that it will be widely read by those whose special care it is to look after the physical and mental welfare of the rising generation.

Lays of the Colleges: being a Collection of Songs and Verses, by Members of the Æsculapian, Medico-Chirurgical, and other Professional Clubs in Edinburgh. Edinburgh: Maclachlan and Stewart. Crown Quarto. 1886. Pp. 268.

CHRISTMASTIDE seems a fitting season at which to call the attention of our professional brethren in every part of the United Kingdom to this handsome and highly-entertaining volume, recently published by the eminent booksellers to the University of Edinburgh.

Until we glanced through the book, we had no idea how closely akin were Celt and Gael in social tastes and pastimes. Substitute "Dublin" for "Edinburgh," and we have in the preface an exact description of the convivial customs and the free, the unrestrained hospitality of the "Medici Hibernici"—

> "Mutato nomine, de te
> Fabula narratur"

It is curious to observe that the self-same preface describes the convivial associations of the "Northern Athens" as "unique in their nature and quaint in their constitution." Perhaps the coming meeting of the British Medical Association in Dublin may prove to our Scottish *confrères* that we too have our convivial associations, "some of them upwards of a hundred years old," albeit their records are still in manuscript and are not wedded to immortal verse. A visit to Boher-na-breena and the romantic Glen-na-Smoel on a fair August evening in 1887, will no doubt dispel the illusion that Edinburgh can claim a monopoly in the matter of "Symposia Medicorum."

Among the contributors to the "College Lays" are some of the most distinguished graduates and professors of the University of Edinburgh. Here is the full list:—The late Dr. Andrew Wood, Sir Douglas Maclagan, Professor John Stuart Blackie, Professor Aytoun, Dr. James D. Gillespie, Dr. J. Smith, Professor Julius Eggeling, Dr. James A. Sidey, Professor Andrew P. Aitkin, Dr. Robert Craig Maclagan, Dr. J. Batty Tuke, and Dr. Robert Lawson, Deputy Commissioner in Lunacy.

In the first of the "College Lays," Dr. Andrew Wood describes the "Medico-Chirurgical Club" as it was constituted in 1868:—

"That Club which for many long years has embraced
The *élite* of Physicians and Surgeons,
Discourses with freedom elsewhere quite unknown,
Unless in these sermons of Spurgeon's,
On things of the State, on things of the Church,
Things artistic, in manner refreshing;
Things prosaic, poetic—all subjects, in short,
Barring those which concern the profession.
While they wash down with beakers of toddy the grub—
Oysters, spatch-cock, crab pies, and hashed venison—
Huge draughts they imbibe from the authors in prose,
And poets from Chaucer to Tennyson."

The characteristic traits of the individual members are cleverly hit off, as the lay proceeds—

"Then *Simpson, Sir James,* but rarely attends,
I suppose he's engrossed with his *labours.*"

Again—

"Next *Turner* has shown himself thoroughly versed
In the *use of the muscles of laughing,*
Demonstrative he, he's prepared to *dissect*
The organs of joking and chaffing."

The able Medical Officer of Health is thus immortalised:—

"Though we've no Robin Hood, yet we've got *Little-John,*
Who takes care of the health of the city."

Nor are the surgeons omitted—

"*Spence's* soul is wrapped up in the Surgeon's high art,
Which with skill he pursues and with patience."

It would be impossible within the limits of a bibliographical notice to do more than notice a few of the "College Lays." Dr. James A. Sidey contributes four pieces, of which the first is entitled "The Irish Schoolmaster." What we may call the "Dublin Stanza" will give a fair idea of this amusing *jeu d'esprit*:—

"You're right, my boy, hould up your head,
And look like a jintleman, sir;
Just tell me now where 'Dublin' is,
Now tell me if you can, sir?
Och! Dublin is a town in Cork,
And built upon the Equator;
It's close to Mount Vesuvius,
And watered by the 'Cratur.'"

But there are in the volume some very touching and beautiful poems—we need only mention those by Dr. Andrew Wood, entitled "In Memoriam" and "The Time is Drawing Near." The former records the death of a much-loved son with these words on his lips—"Peace, perfect peace, and light." In the latter the poet forecasts his own approaching departure from this life :—

> "The thin gray hairs, the waning strength,
> Remind me, year by year,
> That this my home on earth to leave—
> The time is drawing near."

It remains for us merely to point out how handsomely this attractive work has been brought out by the publishers, Messrs. Maclachlan and Stewart, 64 South Bridge, Edinburgh. Binding, letterpress, and paper are above criticism, and there are numerous vignettes and initial letters, which evince much artistic skill and taste.

Report of the Surgeon-General with the Government of Bombay on the Civil Hospitals and Dispensaries in Bombay Presidency. 1886.

We are so seldom favoured with copies of Indian official papers that the profession at this side of the world can form but an imperfect idea of the amount of medical work which is done—and well done—by our Indian brethren, European and Native. We have now before us the Report of the Surgeon-General with the Government of Bombay on the Civil Hospitals and Dispensaries of that Presidency for 1885. From this document, which is dated 8th May, 1886, we learn that in 217 institutions for medical relief (of which nine had been opened during the year), 1,605,968 sick had been treated—37,642 as indoor patients. Of the latter, 27,151 were reported "cured," 4,241 "relieved," and 2,791 (7·4 per cent.) died. Only 153 cases of smallpox were treated (the number in the previous year having been 1,099); but these figures convey no information as to the actual prevalence of the disease, only a small proportion of persons affected applying to hospitals for treatment. The same remark is applicable to cholera, for which 5,360 were treated. On this disease Surgeon-General Moore makes the following observations, one of which we have italicised :—

"With regard to cholera it may be mentioned that whatever views or theories medical officers hold with regard to the dissemination and origin of the disease, all are in perfect accord that sanitary measures in their

fullest sense are the great preventive means. Whether, as some would have us believe, it constantly originates in Bengal and thence spreads westerly over the world; whether, as others think, it originates spontaneously in any country, but more frequently in the East; whether, *as appears in some cases as certain as the exact sciences, it is imported from one place to another by human intercourse;* or whether it can only spread in what has been called its endemic area; whichever of these views observers hold, the utility of sanitary preventive measures is unquestioned."

17·2 per cent. of the total treated were cases of malarious fevers; 2·0 per cent. venereal diseases, including gonorrhœa; 3·0 per cent. rheumatic affections; dysentery, 1·8; diarrhœa, 2·5. No less than 134,399 persons were treated (8·3 per cent. of the total) for intestinal worms:—

"As a rule, subject, however, to many exceptions, it will be found that institutions near the sea-coast treat the largest number of intestinal worms [*sic*]. These worms are always the ascaris lumbricoides or round worms, and there is some reason to believe that the germs or ova of these worms are introduced into the system by some kinds of fish eaten as food and by vegetables not thoroughly washed. The matter is, however, one still requiring investigation, for we do not yet know the life cycle of the round worm as we are acquainted with that of the tapeworm."

In these institutions 4,068 major operations were performed during the year, with 205 deaths (4 per cent.). Of the 4,068 operations, 1,098 were performed on the eye and its appendages, of which 947 were performed in a special ophthalmic hospital. There were 302 amputations, "including one at the hip-joint." 522 cases of lithotomy resulted in 60 deaths (11·5 per cent.), and in 22 cases of lithotrity there were 4 deaths (18·7 per cent.). Analysis of 100 specimens, preserved in the museum of the Medical College, showed that the percentage of oxalate of lime calculi is 38 in India, whereas in England it is only 16. "It may be confidently stated that as with goître, so with stone, both diseases are most common when lime is found in the water. Therefore it would be desirable for wells the water of which is notoriously impregnated with lime to be closed."

17·7 per cent. of the patients treated were women, 36·6 children. There are three Medical Schools in the Presidency—at Poona, Ahmedabad, and Hyderabad—at which 148 pupils were receiving instruction.

PART III.

HALF-YEARLY REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.

By Ringrose Atkins, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

[*Continued from Vol. LXXXII., page 498.*]

II. ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

The Corpus Callosum.—In the April (1886) number of *Brain* Dr. Beevor gives a fuller account of his researches into the structure of the corpus callosum, in antagonism to the views of Professor Hamilton. The method of preparation used was that by Weigert's hæmatoxylin, and the subsequent passage of the sections through alcohol and oil of cloves, as mentioned in his previous note on the subject (*vide* Half-Yearly Report in this Journal, April, 1886). The brains of monkeys and of the marmoset were chiefly employed in the research, and from a careful examination of his specimens under the highest powers of the microscope, Dr. Beevor concludes that the generally-received idea of the corpus callosum is quite correct. The corpus callosum he considers to be a commissure between the two hemispheres, and the fibres of the internal and external capsules, in his opinion, do not pass into the corpus callosum to decussate to the opposite cortex. No distinct decussation can be demonstrated in the middle line of the corpus callosum, and the corona radiata does exist as such, and is not a nonentity as Professor Hamilton would wish us to consider. The paper is illustrated with a plate, containing two figures. Fig. 1 is a *frontal* section through the left centrum ovale of a monkey's brain, and shows the decussation between the corpus callosum and the internal and external capsules. The section is made at the vertical level of the pons Varolii, and through the hinder part of the corpus callosum, just in front of the splenium. Fig. 2 is a horizontal section through a portion of the anterior left half of a monkey's brain, and shows the decussation between the corpus callosum and internal capsule. In the *Liverpool Medico-Chirurgical Journal* for January last, Professor Hamilton refers to Dr. Beevor's

former paper (*Brain*, Oct., 1885), and complains that he has not followed a single one of the methods he himself has employed, and that the clarifying process made use of by Dr. Beevor is so coarse as in itself to destroy any chance of getting a view of the continuity of the crossed callosal tract, and that by employing spirit as a hardening agent all the beauty is shrunken out of the callosal fibres. The method "I use," Dr. Beevor says, "Weigert's hæmatoxylin, has the property of staining all the medullated fibres of the brain, and is so delicate and perfect as to show completely the finest fibres of the cortex, and presents such a delicate network there that they can only be fully appreciated by using high powers as the F. Zeiss. And we are to suppose that these minute fibres are to be everywhere stained in my preparations, and yet the crossed callosal fibres of the bulky corpus callosum—which Professor Hamilton can see with an ordinary magnifying glass—are, in some mysterious manner, shrunk away by using methylated alcohol, after hardening in bichromate of potassium for a month, and by my coarse clarifying agent—oil of cloves! With regard to this latter re-agent, I can positively state that no disappearance of fibres occurs, as I examine the sections under a low power, first in water, then in alcohol, and finally in oil of cloves. There is only this difference—viz., that in the oil of cloves the details are more clearly brought out, owing to its well-known properties of clearing the specimen." Dr. Beevor has not employed Professor Hamilton's method, as he considers that swelling and separating the fibres by the action of potash and gelatine must tend to disturb their normal arrangement much more than alcohol or oil of cloves, and he questions whether Hamilton by his method is able to show the finest plexus of fibres in the cortex, or, if they are visible, whether they are seen as clearly as they are by Weigert's hæmatoxylin method.

Sensory Tract in the Central Nervous System.—In the *Journal of Nervous and Mental Diseases* Dr. M. Allen Starr has an important paper on this vexed and still obscure question. From the minute examination of the brain of a microcephalic infant, and from a careful collocation of other cases and observations, the author draws the following general conclusions:—

1. In the cortex of the brain sensations of touch, pain, temperature, and the muscular sense are perceived.

2. These perceptions occur in the gray matter of the anterior and posterior central convolutions and of the parietal convolutions:

sensations from one side of the body being perceived on the opposite half of the brain, in a more intense degree than in the same half of the brain.

3. The various sensory areas for various parts of the body lie about and coincide to some extent with the various motor areas for similar parts—the area of the face, arm, and leg lying in the lower, middle, and upper thirds of the sensory-motor region respectively.

4. While the motor area is confined to the central convolutions, the sensory area includes to some extent the convolutions of the parietal lobe which lie adjacent and posterior to them. It is, therefore, more extensive than the motor area.

A.—The surface of the body is connected with a definite region of the surface of the brain by distinct tracts, which convey sensory impressions. These impressions enter the spinal cord by the posterior nerve roots, and then ascend in different tracts.

(*a*) The impressions destined to awaken the sensation of touch pass at once to the opposite half of the spinal cord, to a great extent if not entirely, and ascend in the posterior white columns, the impressions from the legs passing in the posterior median, and those from the arms in the posterior lateral columns. On reaching the medulla these impressions pass to the formatio reticularis of the same side on which they were in the cord, and, ascending in this tract through the pons and crus, reach the internal capsule, where they are conducted by a tract lying in the inner half of its posterior third to the corona radiata, whence they diverge to the cortex of the central and parietal regions, the impressions from the leg being perceived in the upper third of these regions, and those from the arm being perceived in the middle third of these regions.

(*b*) The impressions destined to awaken the sensations of pain and temperature also cross the median line immediately after entering the spinal cord and pass up in the gray matter of the cord, probably in its posterior inner part. On reaching the medulla they enter the formatio reticularis, and from this point their course is identical with that of the impressions of touch already traced.

(*c*) The impressions destined to awaken the sensation of the location and of the motion of a limb ascend in the spinal cord in the posterior white columns of the same side upon which they enter, the muscular sense from the legs passing up in the posterior median, and that from the arms in the posterior lateral column. On reaching the medulla these impressions pass to the opposite

side through the sensory decussation, then ascend into the inter-olivary tract to the pons, where they enter the lemniscus, and gradually turn outward from the median line as they pass up through the pons. In the crus these impressions are conducted by the lateral lemniscus, which lies in the outer third of the tegmentum, and which passes directly into the internal capsule, these being situated in the middle part of the posterior third, external, and in close approximation to the sensory tract of touch already described. From this point the course of these kinds of impressions cannot be distinguished from one another, and their termination is in the cortex of the central and parietal regions, the muscular sense of the leg being perceived in the upper third, and that of the arm in the middle third of that region.

B.—Sensory impressions from the face enter the pons by the sensory root of the trigeminus, and pass downward to sensory cells, which lie in the lateral portion of the formatio reticularis, and which are ranged in a column, extending from the junction of the upper and middle third of the pons to the lower limit of the medulla. The upper portion of this column receives the fibres from the upper branch of the nerve, the middle portion from the middle branch of the nerve, and the lower portion from the lower branch. The course of sensory impulses from these sensory cells to the brain is in the lateral part of the formatio reticularis of the same side upon which they enter up to the junction of the upper and middle thirds of the pons, where they cross the median line and join the sensory impressions from the body in the formatio reticularis. In the crus cerebri these impressions pass in the outer half of the tegmentum, and thence, entering the posterior third of the internal capsule, pass on to the corona radiata. In the divergence of fibres in the corona these impressions pass along the lowest radiation, and thus reach the lower third of the central and parietal regions, where they are perceived. It is as yet impossible to distinguish between the course of tactile, painful, and muscular impressions from the face to the cortex of the brain.

C.—Sensory impressions from the great cavities of the body enter the spinal cord by the posterior nerve roots, and are probably received by sensory cells, which lie in the inner and posterior part of the gray matter of the spinal cord—the Clarke column of cells. From these cells these impressions pass outward to a white column lying in the lateral periphery of the cord—the direct cerebellar column—in which they pass upward to the medulla, and on

through the restiform body to the cerebellum, to terminate in the nucleus dentatus or in the cortex, or in both. The existence of a decussation of these impulses is undetermined, but if it occurs it must take place soon after their entrance, as each direct cerebellar column passes to that hemisphere of the cerebellum of the same side upon which it lies. The impressions thus transmitted to the cerebellum are not those of touch, pain, temperature, or the muscular sense, and are probably impressions connected with the functions of vegetative life and destined to awake reflex actions.

The Connections of the Inferior Peduncle of the Cerebellum with the Posterior Columns of the Cord.—It is well known that the inferior peduncle of the cerebellum is made up of numerous bundles of fibres collected from different parts of the cord and medulla. L. Darkschewitsch and S. Frend, *Neurol. Centralblatt*, No. 6, 1886, describe a cross section of the peduncle as elliptical, somewhat bent inwards at its extremities, and consisting of three parts. There is a central portion divided into a ventral and a dorsal half, and a peripheral portion surrounding the two inner halves. The ventral half of the central portion is continuous with the direct cerebellar column of the spinal cord. The dorsal half of the central portion is connected with the nuclei of the posterior column of the cord. The peripheral portion is connected with the opposite olivary body. There is no difference of opinion regarding the first and third of these constituents of the inferior peduncle. Views have been held regarding the connection of the nuclei of the posterior columns of the cord with the cerebellum which are incompatible. Darkschewitsch and Frend review these various opinions, and have examined a series of sections through fœtal medullæ, with the result of establishing the following facts:—The nucleus cuneatus extends cephalad for a much greater distance than the nucleus gracilis, and in its upper part lies in the dorsal half of the inner portion of the inferior peduncle forming the "nucleus of the restiform body" of Wernicke. From it fibres enter the inferior peduncle, thus connecting it with the cerebellum. Fibres also issue from it and pass ventrad as fibræ arcuatæ. These cross the middle line in the so-called sensory decussation, but instead of turning cephalad in the interolivary tract, they continue ventrad and pass between the lateral border of the pyramid and olivary body to the surface of the medulla, where they become arciform fibres, and curving round the lateral surface of the medulla, dorsad, they enter the inferior peduncle of the cerebellum. The same course is traced

for a few fibres from the nucleus gracilis. Thus each nucleus cuneatus and gracilis sends fibres to both inferior peduncles of the cerebellum. This course had been previously described by Edinger, so that these researches are merely confirmatory of his position. The authors also confirm his statements regarding the entrance into the inferior peduncle of short arcuate fibres from the nuclei gracilis and cuneatus.—*Journ. Nerv. and Ment. Dis.*

On the Effect of Hardening Methods upon the Microscopic Appearances in the Spinal Cord.—Danilo and Popow having recently described certain changes in the appearance of the motor cells of the spinal cord in rabbits and dogs after poisoning with arsenic and phosphorus, F. Kreyssig has repeated the experiments under F. Schultze's direction, and observed the results (*Virchow's Archiv.*, Bd. 102). In preparation for the investigation, the normal appearances in the cords of these animals were examined, and certain important facts were elicited which may have a wider application than the author suspects. He found that after hardening in Müller's fluid, or any chromic acid solution, the cells of the normal cords presented great varieties of appearance and of power of absorbing colouring matters. Some cells were coloured dark, and surrounded by a pericellular space; others were pale, and were not so surrounded. Vacuoles were found in the cells—large cells without processes, whose body was apparently deficient in protoplasm, were observed, especially in young animals. All these changes which were ascribed by the earlier investigators to the effects of the poisons were therefore present in normal cords. It was found, however, that these appearances were more evident in cords which had been transferred from Müller's fluid to 96 per cent. alcohol, than in those which had been placed in 10 per cent. alcohol, and then in solutions of alcohol of increasing strength till the strong solution was reached. The appearances were consequently ascribed to the effects of the strong alcohol upon the cords hardened in the chromate salts. When the proper precautions were taken with the cords of animals poisoned with arsenic and phosphorus no such appearances were found as had been described by Danilo, capillary hæmorrhages being the only lesion produced by the poison. It is not at all impossible that the same precautions would be advisable in hardening human cords, since the appearances found resemble those often observed in human cords hardened in the usual manner.—*Journ. Nerv. and Ment. Dis.*

[*To be concluded.*]

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

PATHOLOGICAL SECTION.

President—Walter G. Smith, M.D.
Sectional Secretary—J. B. Story, M.D.

Opening Meeting, Friday, Nov. 5, 1886.

The President in the Chair.

Inaugural Address.

The President delivered an introductory address. [It will be found in the Number of this Journal for December, 1886, Vol. LXXXII., p. 460.]

Liver with two Gall Bladders.

Dr. Purser exhibited a liver with two gall bladders. The specimen was of some little interest from its rarity, though not exemplifying any great morphological law. It was taken from a girl, aged eleven years, who was admitted last week into Sir Patrick Dun's Hospital, extremely ill of scarlatina, which she had had for five days, and who died a few hours after her admission. At the *post mortem* the ordinary changes that occurred in malignant scarlatina were visible. On dissecting off the serous coat of the liver two separate gall bladders were found, each of which had a distinct cystic duct; and these opened into the bile duct, the one at some distance from the other. The projection in the specimen was a small lymphatic gland. There were no marked anomalies in the liver, except that the common hepatic duct, instead of dividing into two branches when coming into the liver, divided into three—one to the left, another to the right, and a third running into a posterior part of the liver. These ducts did not communicate with one another, but were distinct in their whole course. He had looked into all the books and

found no record of any specimen like this. He had consulted Dr. Little, Dr. Cunningham, and other anatomists, but none of them had ever seen anything like it. He had also spoken to Professor Mackintosh, who had not seen anything like it in any lower animal. He was, however, referred to an article in "Todd's Encyclopædia," stating that the formation had been met with in lower animals—not infrequently in cats. He had himself examined a good many cats, but had never met one with more than one duct. It was stated by Quain and other anatomists that anomalies were occasionally met with in the gall bladder; that sometimes it was altogether absent, and that sometimes it was divided by a longitudinal septum; but in the latter case there was a single gall bladder only. He was indebted, however, to Dr. Foot for a case recorded in the "Philosophical Transactions" for the year 1693–94. It was originally written in Latin, and stated that the person was a lady, aged thirty-one, who suffered from loss of appetite, vomiting, and pain, and died after an illness. On a *post mortem* her lungs were found in a state of commencing phthisis. The liver was especially large, and occupied the hypochondrium on both right and left sides. The spleen was smaller than usual. There were strong adhesions of the liver on both sides. There were two gall bladders, both turgid with bile—one in the right and the other in the left lobe of the liver. There was a stone in the kidney.

Perforation of the Stomach.

Dr. Quinlan submitted a case of perforation of the stomach. On the 11th of October, 1886, at the request of Dr. Franks, he received into St. Vincent's Hospital a patient who was cook to a gentleman. She had been for many years subject to chronic disease of the stomach, with dyspepsia and constipation; and on the Wednesday before her death she took a very large dose of Epsom salts and senna. This dose had a very active effect, and was followed by great pain, which increased day by day until, on the following Friday night, it became unendurable. In her agony she crawled out of bed and knocked at the door of the head of the family, who with great humanity immediately sent for Dr. Franks. The latter, at half-past two o'clock in the morning, found the woman lying on her face, supported on her elbows and knees, and in dreadful agony. He found that the pain was localised to the left side of the epigastric region. There was no flatulent distension or pain on pressure. Her pulse was 110, and her temperature normal. Perceiving that it was a case of peritonitis, he applied morphin to keep down the pain. She got worse, and on the following Monday was received into St. Vincent's Hospital. Her abdomen was then greatly distended, but it was remarkable that pressure did not increase the pain. He (Dr. Quinlan) saw her immediately afterwards. She was in dreadful

agony; her temperature was 101·6°, and her pulse 120. Her face had a pinched, collapsed look. He saw that the case would be fatal, and could only endeavour to relieve the pain by morphin. At 11 30 the house surgeon found her free from pain and speaking calmly; and then she suddenly became collapsed and died in a few minutes. On the following morning a *post mortem* was made. Irrespective of the particular lesion, she was a healthy, well-nourished woman, her age being thirty-eight. The intestines were greatly distended with flatus; the contents of the stomach were effused into the peritoneum; and there had been very severe peritonitis. There was a perforation in the stomach at the middle of the lesser curvature. The coats of the stomach were red; and there were a number of patches of very severe congestion, looking like the effect of some irritant poison. He examined the grumous fluid in the stomach but found no trace of antimony, arsenic, or any other poison. There was great thickening of the stomach throughout its entire contents, and considerable evidence of chronic disease. It was evident that the perforation and subsequent peritonitis had been produced by the action of the violent purgative.

Dr. Kendal Franks said he saw the woman before she was admitted into St. Vincent's Hospital. The principal symptom was the intense pain, which was relieved by hypodermic injections of morphin; but there was at first no distension, and there was an absence of tenderness on pressure. She only complained of a little tenderness of the epigastrium on the left side. The only other symptom was obstinate constipation, which prevailed during the days after the severe purging. Up to Monday she had no action of the bowels, although she took another dose of medicine. The distension did not commence until two or three days after the first attack and the day before she went into the hospital. At first he thought it was a case of volvulus or hernial protrusion through a part of the omentum. The vomiting, although frequent, never had a fæcal character. When he saw the result of the *post mortem* he was considerably surprised. The distension was not extensive, but there was an enormous amount of peritonitis, the intestines being matted together with lymph, while there was a good deal of serum and general muck in the peritoneal cavity. There were two openings in the stomach—one in the anterior wall, and the other opposite to it in the posterior wall. The question was when all this took place. It might have been immediately after the purging, but there was no collapse until immediately before death.

Dr. MacSwiney.—Were there any antecedent symptoms of gastric ulcer? The opening is very large; but to me it is conceivable that a condition of ulceration existed long previously to the taking of the Epsom salts.

Dr. Bennett said it was quite clear that there was an enormous

ulcer, in the floor of which the perforation occurred. The only peculiarity was that the perforation was unusually large. There could be no doubt that an extensive chronic ulcer was present in the case.

Dr. Quinlan, in reply, said there was no doubt that the perforation took place on the site of a large old chronic ulcer. That was mentioned in the theatre of St. Vincent's Hospital while the *post mortem* was going on. The ulcer was of long standing, and the coats of the stomach were thickened by it, and owing to the pulling and tearing caused by the purgative, the perforation took place. The circumstance which most surprised him was the absence of pain on pressure—in fact, pressure seemed to give a certain amount of relief. There was no phenomenon but intense pain in the case; and at first the idea of an ulcer did not occur to him, and he thought the case one of intussusception. The complaint she had made was of chronic constant constipation, and a necessity for taking purgative medicines.

Colloid Carcinoma of the Stomach.

Dr. Kendal Franks exhibited the stomach, omentum, transverse colon, pancreas, and spleen of a man who died in the Adelaide Hospital of colloid carcinoma of the stomach. He was only thirty-eight years of age. The history of the disease dated back eight months, when some pain in the epigastrium was first observed. A tumour was felt for the first time two months previously. Abdominal section was performed on the 12th October, but as it was evident that the tumour could not be removed the wound was closed. The patient died twelve days afterwards from exhausting diarrhœa, which set in a few days previously. The wound was firmly healed, and there was no evidence of peritonitis. The specimen showed the stomach walls enormously thickened, white externally, discoloured internally. The different layers of the walls were undistinguishable. The orifices were of normal size. The transverse colon behind was also the seat of colloid degeneration, but not to the same extent. The duodenum was healthy. The orifices of the stomach were scarcely altered in size. The pancreas and spleen were firmly adherent to the stomach, and seemed to be involved in the disease, but the liver was healthy. The great omentum presented a hard, nodulated, cancerous ridge at its junction with the stomach. Dr. Franks alluded to three cases presented to the Pathological Society by the late Dr. Stokes, and to drawings of them which Dr. Foot possessed. Microscopical sections, showing the colloid nature of the disease, were prepared by Dr. Bewley and exhibited to the meeting.

Dr. Foot said this was an uncommon form of carcinoma of the stomach, and he believed it to belong to a class which would never be successfully operated on, the reason being that an extensive and widespread infiltration of the pylorus, and sometimes as far as the œsophageal

opening, preceded the formation of any tumour. In the cases represented by the three drawings which he laid before the Section the stomachs were gradually diminished in size by growths projecting on the mucous surface towards the interior of the stomach; and in some of these cases the stomach was reduced to the size of the small intestine. According to Cruveilhier, the information about this form of cancer might be summed up under three heads—viz., first, it was the form of gastric carcinoma the local symptoms of which were the most obscure; secondly, it was the form in which the cachexia was least pronounced; and, thirdly, it was the form in which ulceration was rarest.

Dr. Franks, in reply, said there was a real tumour in the case, and the mass of the omentum below was thought to be the margin of the liver. The moment a specimen of the kind was seen it became manifest that it was not capable of removal; but without exploration it would be impossible to say whether it could be removed or not. He held that the opening of the abdomen for that purpose was quite as innocent as leaving the patient alone to a certainty of death.

Fibroma of the Cornea.

Dr. A. H. Benson showed sections of a fibrous tumour which he had removed by dissection from the anterior surface of the apex of the cornea of a girl aged nineteen, otherwise healthy. It had commenced near the apex of the cornea about three years previously, and had slowly grown in density and extent without any past or present sign of inflammation in its neighbourhood. It was of a dense white colour, measured about 4 mm. in diameter and 1 mm. in thickness, and was raised above the surface of the surrounding cornea, with sharply-defined margin. Its surface was evenly covered by the corneal epithelium. When dissected off, the cornea under it was perfectly transparent and normal-looking. There was no vascularity in or about the tumour, or anywhere in the cornea; nor was there any history of such having been present at any time. The tumour commenced and grew painlessly. Microscopic examination showed it to consist of apparently normal corneal tissue, with cells and corpuscles. It seemed to be a case of true corneal tumour, though Alt, in his "Histologie des Auges," p. 40, states his disbelief in the occurrence of such. This tumour had nothing whatever to do with the limbus conjunctivæ or the episcleral tissue, the usual origin of so-called corneal tumours.

Mr. Story asked were there any blood-vessels in connection with the tumour? It would be curious to find a tumour of such a character and in such a site without any vascular connection. He had never seen a case of corneal tumour save one of doubtful character. The patient was a boy from the County of Wicklow, whom he showed to Dr. Benson, Mr. Swanzy, and Mr. Fitzgerald ten or twelve months ago. The boy

had a tumour on the surface of the cornea, and sinking into the tissue of it, but covered over by the epithelium. It was a small yellowish mass, which did not extend to the margin of the cornea. It had been there for a considerable time, and did not alter in any way while the boy was in hospital, and they did not think it advisable to remove it. Had it been removed the deep hollow which would have been formed might have led to an ulcer, or might otherwise have done him more harm than the apparently innocuous growth. He made an incision into it in order to see what the inside of it was like, but did not obtain any information. It was of a firm consistence throughout, and provided all through with blood-vessels. The boy went home, and had the growth in his eye still for all that he knew. As to the tumour shown by Dr. Benson, he was not able to say what it was.

Dr. Purser remarked that Bowman, in his work on the parts concerned in operations on the eye, had figured a growth on the surface of the cornea consisting of papillæ. Perhaps Dr. Benson's tumour was of that character. From Dr. Benson's description he would imagine that the tumour consisted of papillæ growing on the surface of the cornea—in fact, it was like a wart on the surface of the cornea.

Dr. Benson, in reply, said there were no blood-vessels in the tumour or cornea, or any opacity that might be the remains of blood-vessels previously existing, or any history of any previous condition of congestion of the eye which might have been the seat of vascular communication between the tumour and the margin of the cornea. The tumour was perfectly smooth and fine. There was no nodulation, or even bossing up of the central part of the cornea.

MEDICAL SECTION.

President—James Little, M.D.; President of the King and Queen's College of Physicians.

Sectional Secretary—A. N. Montgomery, M.K.Q.C.P.

Opening Meeting, Friday, Nov. 19, 1886.

The President in the Chair.

Inaugural Address.

The President gave an introductory address on some of the circumstances which have prevented a precise knowledge of the action of medicine. [It will be found in the Number of this Journal for December, 1886, Vol. LXXXII., page 437.]

Narcolepsy.

Dr. A. W. Foot read a paper on Narcolepsy. [It will be found in the Number of this Journal for December, 1886, Vol. LXXXII., page 465.]

Dr. Henry Kennedy said that in Simpson's Hospital he had frequently observed persons, more or less advanced in life, showing a tendency to fall asleep under unusual conditions—for instance, at dinner. He considered this tendency to be due to the blood being overloaded with the purest kind of fat, as described by the late R. Smith.

Mr. Corley mentioned a case which he had had under treatment that tallied in every respect with the description of the disease given by Dr. Foot. Three or four years ago a dairyman's labourer was admitted into the Richmond Hospital. He had some months before fallen from a dairy cart on the back of his head. When eating he suddenly let his knife and fork fall and went to sleep. He had evidently cerebral pressure. His family history suggested that he had something in the nature of a tumour, probably out of reach of the surgeon's knife. The case had a fatal result. Dr. Abraham made a *post mortem* examination, which confirmed this diagnosis. There was a small abscess twice the size of a walnut in the posterior right lobe of the cerebrum; and no doubt the symptoms depended upon that. The striking similarity in the symptoms described by Dr. Foot indicated that some part of the cerebrum was affected in his case also.

Dr. C. J. Nixon had recently seen a member of his own profession who was suffering from attacks like angina pectoris. Close on sixty years of age, the gentleman in question had been for several years, whilst in the Army Medical Service, subject to sudden attacks of periodic sleep at extraordinary times, even on duty. The intervals between the attacks greatly decreased, and he was obliged to leave the service.

The President said he had seen only one such case—that of a powerful young man, aged twenty-seven or twenty-eight, who managed successfully a great business in the city. He was of a family in whom neurotic affections abounded consequent on close intermarriage, his father and mother being first cousins. Residing at Blackrock, he had frequently fallen asleep in the train and been carried on to Kingstown, while several times he had for the like reason fallen off his horse. At the same time, his intellectual faculties were unimpaired. Before consulting him, the gentleman had been under Dr. Garrod, of London, who attributed the attacks to the loaded state of his bowels. Having then come to him, he prescribed strychnin, but the attacks had not subsided. The gentleman now dined in the middle of the day, and took half an hour's sleep after dinner; and thus he was enabled to resume business for the rest of the day. He was a total abstainer and a non-smoker.

Dr. Knight and Mr. A. Benson also joined in the discussion.

Dr. Foot replied:—He was aware of Smith's observations on fat and free oil which that writer had used, not in connection with extreme tendency to sleep, but with fatty degeneration of the viscera, and thus he had described free oil flowing out of the body. Sleepiness at meals had nothing to do with narcolepsy. A good dinner, a warm fire, and a comfortable chair, invited sleep. Following Gélineau and Dana, he had used the word "neurosis." One of Gélineau's patients, who was a doctor, had started a nice medico-legal question—"What would become of me," he asked, "if the sleep attack came on me whilst on sentry or on guard? I should be shot, and not for any fault of mine."

Myxœdema.

Dr. C. J. Nixon read a paper on a case of myxœdema, having previously exhibited the patient. [It will be found at page 1.]

Dr. M'Swiney said the paper proved, as also a recent case operated on by Sir William Stokes, that the crucial experiments performed by the surgeon often disproved theoretical conclusions which were the result of mere observation.

Sir Wm. Stokes said his case was that of a female with a rapidly increasing bronchocele. Owing to the mechanical effects of pressure of the tumour he deemed it necessary to relieve her. The operation consisted of two parts. He first removed the left lobe of the thyroid gland as the largest of the two. The wound healed, and the patient perfectly recovered. After a considerable interval she presented herself again for admission into hospital. The tumour on the right side having undergone remarkable diminution, increased rapidly, and gave rise again to the serious symptoms referable to mechanical pressure. Thereupon he removed the remaining lobe of the thyroid. The wound completely united, and the patient seemed to go on favourably till the remarkable symptoms detailed in Dr. Nixon's case supervened—pallid face, puffy eyes, and swelling about the wrist and ankles, which pitted on pressure, while the intellect became impaired as indicated by the length of time it took her to answer a question. At length, as the symptoms became urgent, she had convulsive seizures, somewhat epileptiform, respiration became difficult, and she expectorated large quantities of mucus—these conditions increasing till she died from exhaustion. He had little doubt there was a distinct connection between the complete removal of the thyroid gland and the symptoms which subsequently developed. Still he would not take a gloomy view of the future of thyroidectomy. There had been a large number of cases of removal of the thyroid gland unattended by the development of myxœdema.

Dr. C. J. Nixon replied:—He considered that Sir Wm. Stokes' case bore out the views which he had expressed. In those cases of complete removal alluded to, there might have been supernumerary glands which would

take on the function of the extirpated thyroid; but Professor Horsley warned surgeons against the removal of the entire thyroid gland. He witnessed a remarkable case in which pressure became so distressing as to render operative procedure advisable. His colleague intended to remove the gland; but he found such difficulty that he contented himself with the division of the deep cervical fascia over the gland, which sufficed to allow of the gland coming forward, and thus pressure was taken off the trachea. The curious result of the relief of pressure from the gland was that it underwent extremely rapid atrophy, and the goitre cured itself.

The Section then adjourned to the 17th of December.

CALOMEL IN CARDIAC DISEASES.

Professor S. Stiller, influenced by the good results obtained by Jendrassik, has used calomel in fourteen cases of cardiac dropsy, some of which were in private and some in hospital patients. He did not observe the extraordinary diuretic effect that Jendrassik observed in some of his cases, but the good results of the drug were always so prompt and marked that calomel must acquire a sure footing in the treatment of cardiac troubles. A few cases are recorded which bear out the author's assertions. In one case of senile cardiac degeneration in a very advanced stage calomel had no effect; neither had the subsequent administration of digitalis. The same was true in a case of renal dropsy, and also in one of dropsy from cirrhosis. In cases of cardiac dropsy with considerable albuminuria, the action of the remedy is much slower, and is noticeable only after five or six days' administration. The author sums up as follows:—1. Calomel is a prompt diuretic and hydragogue in cardiac dropsy, being more rapid and powerful in its action than digitalis; with other remedies there is no comparison. 2. Its action is not limited to the cellular œdema, but extends also to the effusion into the cavities. 3. Diuresis sets in abruptly after three or four days' administration of the drug; it is advisable then to withhold the remedy until its effect is beginning to pass off. 4. Its *modus operandi* seems to be through its influence on resorption, and not upon any effect on the heart or kidneys. 5. In a majority of cases diarrhœa occurs, and sometimes stomatitis, which, however, are not manifestations of mercurialism. 6. Opium checks the diarrhœa without any apparent effect upon the diuresis. 7. In advanced stages of cardiac disease calomel seems to hasten the lethal termination. 8. Calomel is not a substitute for digitalis, as it is not a heart tonic, but, given either alternately or with digitalis, it forms a powerful auxiliary to that drug, and constitutes an invaluable acquisition in cardiac therapeutics.—*Centralblatt für d. ges. Therap.*, Sept., 1886, and *N. Y. Med. Journal*, Nov. 20, 1886.

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, December 4, 1886.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

Towns	Weeks ending				Towns	Weeks ending			
	Nov. 13.	Nov. 20.	Nov. 27.	Dec. 4.		Nov. 13.	Nov. 20.	Nov. 27.	Dec. 4.
Armagh -	5·2	20·7	20·7	0·0	Limerick -	17·5	27·0	12·1	28·3
Belfast -	19·7	18·6	23·3	17·2	Lisburn -	19·3	24·2	19·3	9·7
Cork -	23·4	25·3	18·8	27·3	Londonderry	30·3	28·5	26·7	21·4
Drogheda	12·7	4·2	12·7	21·1	Lurgan -	15·4	15·4	5·1	35·9
Dublin -	22·9	23·6	24·7	27·2	Newry -	21·1	10·5	14·0	10·5
Dundalk -	13·1	4·4	21·8	13·1	Sligo -	9·6	4·8	4·8	14·4
Galway -	6·7	23·5	23·5	43·7	Waterford -	11·6	30·1	25·5	41·7
Kilkenny	4·2	16·9	12·7	8·5	Wexford -	17·1	34·2	17·1	21·4

In the week ending Saturday, November 13, the mortality in twenty-eight large English towns, including London (in which the rate was 17·9), was equal to an average annual death-rate of 19·5 per 1,000 persons living. In Glasgow the rate was 23·3 ; and in Edinburgh it was 21·0.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 20·4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·6 per 1,000, the rates varying from 0·0 in ten of the districts to 7·1 in Londonderry—the 17 deaths from all causes registered in that district comprising 1 from measles and 3 from diarrhœa. The 84 deaths from all causes registered in Belfast comprise 3 from scarlatina, 2 from typhus, 1 from diphtheria, 1 from simple continued fever, and 4 from diarrhœa. Among the 36 deaths in Cork are

1 from scarlatina and 3 from enteric fever; and 1 of the 6 deaths in Newry was caused by typhus.

In the Dublin Registration District the births registered during the week amounted to 204—109 boys and 95 girls—and the deaths to 160—82 males and 78 females.

The deaths represent an annual rate of mortality of 23·6 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 22·9 per 1,000.

Twenty-six deaths from zymotic diseases were registered, being 8 under the number for the preceding week, and equal to the average for the forty-fifth week of the last ten years; they comprise 15 from scarlet fever (scarlatina), 2 from whooping-cough, 2 from cerebro-spinal fever, 3 from enteric fever, 3 from diarrhœa, &c.

Thirty-three cases of scarlatina were admitted to hospital during the week, being 9 over the admissions for the preceding week; 44 scarlatina patients were discharged, 3 died, and 106 remained under treatment on Saturday, being 14 below the number in hospital on Saturday, November 6.

Ten cases of enteric fever were admitted to hospital, being 1 under the admissions for the preceding week; 4 patients were discharged, 1 died, and 41 remained under treatment on Saturday, being 5 over the number in hospital at the close of the preceding week.

Five cases of typhus were admitted during the week, 1 patient was discharged, and 1 died; 6 cases of the disease remained in hospital on Saturday.

Twenty-eight deaths from diseases of the respiratory system were registered, being 7 over the number for the preceding week, but 10 under the average for the forty-fifth week of the last ten years; they comprise 22 from bronchitis and 2 from croup.

In the week ending Saturday, November 20, the mortality in twenty-eight large English towns, including London (in which the rate was 17·4), was equal to an average annual death-rate of 19·1 per 1,000 persons living. In Glasgow the rate was 23·7; and in Edinburgh it was 19·4.

The average annual death-rate in the sixteen principal town districts of Ireland was 21·9 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·5 per 1,000, the rates varying from 0·0 in Limerick, Newry, Kilkenny, Drogheda, Wexford, Sligo, Lisburn, and Lurgan, to 6·5 in Cork—the 39 deaths from all causes registered in the last-named district comprising 5 from scarlatina, 2 from typhus, and 3 from enteric fever. Among the 79 deaths from all causes registered in

Belfast are 1 from ill-defined fever, 5 from enteric fever, and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 196—101 boys and 95 girls—and the deaths to 166—83 males and 83 females.

The deaths represent an annual rate of mortality of 24·5 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 23·6 per 1,000.

Twenty-two deaths from zymotic diseases were registered, being 3 below the average for the corresponding week of the last ten years, and 4 under the number for the week ended November 13; they comprise 10 from scarlet fever (scarlatina), 1 from typhus, 2 from whooping-cough, 1 from diphtheria, 2 from enteric fever, 2 from diarrhœa, 2 from dysentery, &c.

Thirty cases of scarlatina were admitted to hospital during the week, being 3 under the admissions for the preceding week; 18 scarlatina patients were discharged, 2 died, and 116 remained under treatment on Saturday, being 10 over the number in hospital at the close of the preceding week.

Three cases of enteric fever were admitted to hospital, being a decline of 7 as compared with the admissions for the preceding week; 3 patients were discharged, 1 died, and 40 remained under treatment on Saturday, being 1 over the number in hospital on Saturday, November 13.

Four cases of typhus were admitted to hospital, being 1 under the admissions for the preceding week; 10 cases of this disease remained under treatment on Saturday, against 6, the number in hospital at the close of the preceding week.

Thirty-four deaths from diseases of the respiratory system were registered, being 6 over the number for the preceding week, but 9 under the average for the forty-sixth week of the last ten years; they comprise 24 from bronchitis, and 4 from pneumonia or inflammation of the lungs.

In the week ending Saturday, November 27, the mortality in twenty-eight large English towns, including London (in which the rate was 19·4), was equal to an average annual death-rate of 20·2 per 1,000 persons living. In Glasgow the rate was 25·3; and in Edinburgh it was 18·8.

The average annual death-rate represented by the deaths registered last week in the sixteen principal town districts of Ireland was 22·0 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·6 per 1,000, the rates varying from 0·0 in ten of the districts to 6·7 in Galway—the 7 deaths from all causes tabulated for that district comprising 2 from measles. Among the 99

deaths from all causes registered in Belfast are 5 from scarlatina, 1 from typhus, 1 from ill-defined fever, 2 from enteric fever, and 1 from diarrhœa. Among the 29 deaths in Cork are 1 from diphtheria and 5 from enteric fever; and the 15 deaths in Londonderry comprise 2 from measles.

In the Dublin Registration District the births registered during the week amounted to 197—108 boys and 89 girls—and the deaths to 171—91 males and 80 females.

The deaths represent an annual rate of mortality of 25·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 24·7 per 1,000.

Twenty-three deaths from zymotic diseases were registered, being 1 over the number for the preceding week, but 8 under the average for the forty-seventh week of the last ten years; they comprise 7 from scarlet fever (scarlatina), 1 from typhus, 3 from whooping-cough, 1 from diphtheria, 1 from ill-defined fever, 5 from enteric fever, 4 from diarrhœa, &c.

Forty-five cases of scarlatina were admitted to hospital during the week, being 15 over the admissions for the preceding week; 24 scarlatina patients were discharged, 1 died, and 136 remained under treatment on Saturday, being 20 over the number in hospital on Saturday, November 20.

Seven cases of enteric fever were admitted to hospital, being 4 in excess of the admissions for the preceding week; 12 patients were discharged, 1 died, and 34 remained under treatment on Saturday, being 6 under the number in hospital on the previous Saturday.

There were but 2 cases of typhus admitted, being 2 under the admissions for the preceding week; 12 typhus cases remained under treatment in hospital at the close of the week.

The number of deaths from diseases of the respiratory system registered during the week is 28, being a decline of 6 as compared with the number for the preceding week, and 21 below the average for the forty-seventh week of the last ten years; 16 out of 28 deaths in this group were caused by bronchitis, and 5 by pneumonia or inflammation of the lungs.

In the week ending Saturday, December 4, the mortality in twenty-eight large English towns, including London (in which the rate was 20·3), was equal to an average annual death-rate of 21·0 per 1,000 persons living. In Glasgow the rate was 27·3; and in Edinburgh it was 21·2.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·7 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·5 per 1,000, the rates varying from

0·0 in Galway, Kilkenny, Drogheda, Wexford, Dundalk, Sligo, Lisburn, and Armagh, to 7·1 in Londonderry—the 12 deaths from all causes registered in the last-named district comprising 3 from measles and 1 from diarrhœa. The Registrar of Londonderry, No. 2 District, remarks :—"There is an epidemic of a very bad type of measles in my district, and throughout the city." The 73 deaths from all causes registered in Belfast comprise 2 from scarlatina, 1 from typhus, 2 from simple continued fever, and 1 from diarrhœa. Among the 42 deaths in Cork are 1 from scarlatina and 3 from enteric fever; the 21 deaths in Limerick comprise 1 from typhus and 1 from whooping-cough; and the 7 deaths in Lurgan comprise 1 from typhus.

In the Dublin Registration District the births registered during the week amounted to 171—87 boys and 84 girls—and the deaths to 190—100 males and 90 females.

The deaths represent an annual rate of mortality of 28·1 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·2 per 1,000.

Twenty-four deaths from zymotic diseases were registered, being 1 over the average for the corresponding week of the last ten years, and 1 over the number for the week ended November 27; they comprise 1 from measles, 8 from scarlet fever (scarlatina), 1 from typhus, 2 from whooping-cough, 1 from ill-defined fever, 5 from enteric fever, 3 from diarrhœa, &c.

Thirty-seven cases of scarlatina were admitted to hospital during the week, being 8 under the admissions for the preceding week; 29 scarlatina patients were discharged, 1 died, and 143 remained under treatment on Saturday, being 7 over the number in hospital on Saturday, November 27.

Five cases of enteric fever were admitted to hospital, being 2 under the admissions for the preceding week; 3 patients were discharged, 1 died, and 35 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

Three cases of typhus were admitted against 2 admissions in the preceding week; 15 cases of this disease remained in hospital at the close of the week, being an increase of 3 as compared with the number on Saturday, November 27.

Thirty-one deaths from diseases of the respiratory system were registered, being 3 over the number for the preceding week, but 16 under the average for the forty-eighth week of the last ten years; they comprise 23 from bronchitis and 5 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of November, 1886.

Mean Height of Barometer, - - -	29·887 inches.
Maximal Height of Barometer (on 24th, at 9 p.m.),	30·776 ,,
Minimal Height of Barometer (on 5th, at 11 p.m.),	29·124 ,,
Mean Dry-bulb Temperature, - - -	45·9°.
Mean Wet-bulb Temperature, - - -	44·3°.
Mean Dew-point Temperature, - - -	42·5°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·275 inch.
Mean Humidity, - - - - -	88·2 per cent.
Highest Temperature in Shade (on 3rd), - -	58·5°.
Lowest Temperature in Shade (on 7th), - -	34·1°.
Lowest Temperature on Grass (Radiation) (on 7th),	27·9°.
Mean Amount of Cloud, - - - -	65·3 per cent.
Rainfall (on 18 days), - - - -	2·180 inches.
Greatest Daily Rainfall (on 5th), - -	·452 inch.
General Directions of Wind, - - -	S.W., W., N.W.

Remarks.

A mild, open month, but generally dull and damp. Rain fell frequently, but the amounts were on no occasion very large. During the prevalence of a remarkable anticyclone in the fourth week temperature was singularly high in Dublin for the time of year, whereas in London dense fogs and sharp frosts were reported daily.

In Dublin the mean temperature (46·4°) was—as in October—2° above the average (44·4°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 45·9°. In the twenty-one years ending with 1885, November was coldest in 1878 (M. T. = 38·2°) and warmest in 1881 (M. T. = 50·3°). In 1885, the M. T. was 45·9°, or actually 0·4° above that of the preceding October; in the year 1879 (the cold year) it was 43·9°.

The mean height of the barometer was 29·887 inches, or 0·020 inch above the average value for November—namely, 29·867 inches. The mercury rose to 30·776 inches at 9 p.m. of the 24th, and fell to 29·124 inches at 11 p.m. of the 5th. The observed range of atmospherical pressure was, therefore, 1·652 inches—that is, more than an inch and one-half. Atmospherical pressure had not been as high in Dublin as it was on the 24th since 9 a.m. of March 5, 1883, when the reading was 30·791 inches. On January 18, 1882, the remarkably high value of 30·935 inches was recorded at 10 30 p.m. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 45·9°, or 5·5° below the value for October, 1886; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) =

Mean Temp.—from the means of the daily maxima and minima was 45·7°, or precisely 2° above the average mean temperature for November, calculated in the same way, in the twenty years, 1865–84, inclusive (43·7°). The arithmetical mean of the maximal and minimal readings was 46·4°, compared with a twenty years' average of 44·4°. On the 3rd the thermometer in the screen rose to 58·5°—wind S.S.W.; on the 7th the temperature fell to 34·1°—wind N.W. The minimum on the grass was 27·9° on the same date. The rainfall was 2·180 inches, distributed over as many as 18 days. The average rainfall for November in the twenty years, 1865–84, inclusive, was 2·312 inches, and the average number of rainy days was 16·8. The rainfall, therefore, was somewhat below the average, while the number of rainy days was slightly in excess. In 1876 the rainfall in November was large—3·614 inches on 20 days; and in 1872 3·414 inches fell on as many as 24 days. On the other hand, in 1870, only 1·218 inches were measured on 11 days. In 1868 also—the "warm year"—and in 1871, the November rainfall was only 1·258 inches on 19 and 14 days, respectively. The amount of precipitation varies almost less in this than in any other month.

A solar halo was seen on the 1st and a lunar halo on the 2nd. The atmosphere was foggy on the 17th, 18th, 22nd, 23rd, 25th, 26th, and 27th. High winds were noted on 8 days, gales prevailing on 2 days. Hail fell on the 10th and 11th, and snow and sleet on the morning of the 9th. A thunderstorm, with heavy rain and hail, passed a few miles S.E. of Dublin early in the morning of the 10th. At 7 45 p.m. of the 2nd a brilliant meteor flashed across the southern portion of the heavens from N.E. to S.W.

In the week ending Saturday, the 6th, changeable weather prevailed, depending on a south-westerly type of pressure distribution, a large area of high barometrical readings being found over central and southern Europe, while a series of depressions skirted the W. and N.W. coasts of the British Isles. On the 5th, however, a deep depression formed over England, causing northerly winds and low temperature in Ireland. At 8 a.m. of the 6th the barometer was below 28·90 inches in Yorkshire and the midland counties of England.

During the second week (7th–13th inclusive) very changeable, wet weather was experienced in Great Britain, while it was colder, with northerly winds, in Ireland. Numerous, although not deep, depressions moved along very erratic paths over the former country—some of the systems travelling from N. to S., while others pursued an opposite course, moving from S. to N. as tangents to a high pressure system, which held over Scandinavia. On the morning of the 9th, local cold and sharp frost held in central Ireland, and sleet and snow fell heavily in and about Dublin, the mountains being covered with snow for the first time this season. Early next morning a thunderstorm, accompanied with

heavy rain and hail, came in upon the coast at Bray and Greystones, Co. Wicklow, from N.E. Hail fell in Dublin later in the day, as also on the 11th.

The weather of the third week (14th–21st inclusive) was much quieter and finer, although small amounts of rain still fell from time to time. At first the barometer was low generally, and on Wednesday, the 17th, a rather deep subsidiary depression passed eastwards across Wales and England, causing rains and high winds in those countries, whereas a bright bracing day was experienced in Dublin. On the 18th, however, the barometer rose briskly, and an anticyclone began to form over France. This system gradually became intensified, spreading northwards over the United Kingdom, where it finally remained stationary for several days.

During the fourth week, from the 21st to the 27th, the distribution of pressure, temperature, winds, and weather, were all continuously anticyclonic. In Ireland the winds were at first S.W., and dull, mild weather prevailed, but in the S.E. of England dense fogs and low temperature accompanied the high pressure system—early on the 24th minima were recorded as low as 27° at Cambridge, 28° at Oxford and in London. On the evening of this day the barometer read 30·79 inches at Birr Castle, Parsonstown, and 30·78 inches in Dublin. The London fogs during this calm period were of exceptional density, but of strange inconstancy as regards their distribution in that metropolis.

The last few days witnessed the gradual retreat of the anticyclone—which was also slowly dispersing—to the Continent, and the re-establishment of steep gradients for S.W. and W. winds in the British Islands and Scandinavia. At the close of the month temperature was falling decidedly and snow showers had set in over Scotland.

QUILLAIA SAPONARIA, A SUBSTITUTE FOR SENEGA.

Senega is dear, has a bad taste, and is not well borne by the stomach in many cases. Dr. Kobert finds that the bark of quillaia saponaria contains the same active principles as senega and in five times the amount, and recommends it on the following grounds:—1. It is better borne than senega. 2. The remedy is gladly taken, even by children, on account of its sweet taste. 3. Its power as an expectorant is beyond question. A decoction of the strength of 5 in 200 was used—half an ounce for adults, a teaspoonful for children.—*Med. Chronicle III.* from *Centralbl. für klin. Med.*, 30, 1885. Goldschmidt fully confirms Kobert's conclusions, and points out that quillaia is a sure, cheap, and not disagreeable expectorant.—*Aertz. Intelligenzbl.*, 1885.

PERISCOPE.

MULTIPLE NEURITIS.

Until within a very few years the tendency to refer a large number of obscure trophic, sensory, and motor troubles to lesions of the cord, and especially to lesions of the anterior cornua, was very general. Hence these affections came to be regarded as symptomatic of various forms of poliomyelitis anterior. Just now the pendulum is swinging the other way, and there is a growing—perhaps already an exaggerated—disposition to ascribe those manifestations not to central but to peripheral causes. Disorders such as we refer to now suggest, in place of some spinal affection, more or less generalised alterations in the nerves themselves. Hence the frequent recurrence of such terms as multiple neuritis, polyneuritis, and peripheral neuritis in the observations of the neuropathologists. Many of the cases are characterised by symptoms by no means restricted to a limited region of the peripheral nervous distribution; but, as Lucas-Champonnière insists upon in a recent article (*Journal de Médecine*, July, 1886), they were characterised by phenomena sufficiently extensive to realise the type of paraplegias, partial paralysis of all four limbs, or even a general paralysis to such a degree that the differential diagnosis from paralyses of central origin is extremely difficult. Among the chronic forms of multiple neuritis, one of the most interesting is pseudo-tabes. But the acute forms are of not inferior interest, especially as their study has been rewarded by fresh knowledge in the direction of causation. The causes of these forms of neuritis at present arrange themselves into three principal groups—1. Intense or prolonged cold, especially under circumstances of great fatigue; 2. Toxic, among which alcohol holds chief place, although arsenic and lead are important; and, 3. Infection. The third ætiological group includes such acute and chronic infective diseases as relapsing fever, variola, diphtheria, rheumatism (which seems to have specially close relations with polyneuritis), syphilis, and tuberculosis. To these we would add enteric fever. The symptoms are, however, but little modified by special causes. The cases are acute, subacute, and chronic. The palsy is usually ascending, in many cases first attacking the lower extremities symmetrically, then the upper extremities, and finally the trunk. It may, on the other hand, remain limited, or chiefly affect one side. Muscular atrophy, more or less marked, is an almost constant symptom. The reaction of degeneration is present in varying degrees. Among the manifestations of trophic changes are œdema of the extremities, dryness and roughness of the skin, pigmentation and erythematous patches, eczema, abundant sweating. Anæsthesia is less common than hyperæsthesia. Paræsthesia

is constant, often manifesting itself as pain. The march of the affection is irregular; its terminations are equally inconstant. Sudden death, equally sudden restoration to health, gradual improvement, and a chronic, little-varying condition, with fair general health, have been noted. Alcoholic paralysis, first described by Jackson, of Boston, in 1822, later by Huss, Lancereaux, Leudet, and Wilks, and very recently fully studied by Broadbent, Déjérine, Hun, Dreschfeld, and others, is the best-known form of peripheral neuritis of toxic origin. Like other alcoholic affections, alcoholic paralysis does not differ in its symptoms from similar conditions due to other causes, and hence cannot be looked upon as a specific disease. Full recovery usually follows the discontinuance of alcohol.—*Philadelphia Medical Times*, October 2, 1886.

ON THE OCCURRENCE OF CELLULOSE IN TUBERCULOSIS.

Cellulose, the principal constituent of the vegetable cell-wall, has been found to occur also in some animals; the mantle of *Phallusia mamillaris* and of Cynthia, and the external coat of Salpa consist mainly of tunicin, or animal cellulose. Now a further very valuable contribution to our knowledge of the occurrence of this body has been made in Vienna by Herr Ernst Freund, working at Prof. E. Ludwig's laboratory. Freund has succeeded in preparing from some of the organs and blood of tuberculous persons a substance exactly resembling cellulose, and showing all the reactions which have hitherto been described as peculiar to the latter. The reactions employed were the following:—(1) Conversion of cellulose when dissolved in concentrated sulphuric acid into dextrose on boiling with dilute sulphuric aid; (2) resistance if treated with Schultze's reagent, a mixture of nitric acid and chlorate of potassium; (3) yielding of a collodion-like mass by the action of nitric acid and ether; (4) assuming a blue colour by the action of iodine in presence of concentrated sulphuric acid or chloride of zinc solution; (5) assuming a violet colour by the action of *a* naphthol when dissolved in concentrated sulphuric acid (Molisch's reaction); (6) insolubility in common (indifferent) solvents (dilute alkalies); (7) solubility in a solution of cupric hydroxide in ammonia. The substance obtained from miliary tubercles and from the blood of tuberculous persons was subjected to ultimate analysis in three cases, and yielded between 45·12 and 44·70 per cent. C, and between 6·41 and 6·19 per cent. H; while 44·74 per cent. C and 6·17 per cent. H corresponds to $C_6H_{10}O_5$. A quantitative determination of the cellulose of the tubercles has not been made. The researches were carried out on material from twenty-five tuberculous and thirty non-tuberculous cases. The tuberculous material (lungs, spleen, peritoneum with miliary tubercles, blood) embraced cases of conglomerated as well as of infiltrated tuberculosis in the different stages of the disease. The non-tuberculous material examined was taken partly from healthy organs, partly from

organs affected by various diseases—as, *e.g.*, from pneumonia, emphysema, pulmonary gangrene—and failed to show any of the reactions described above. Carcinomatous, sarcomatous, lupoid, syphilitic, and other non-tuberculous granulations were also examined with negative results. From his researches Herr Freund makes the suggestion that in tuberculous growths and in the blood of tuberculous persons cellulose forms an intrinsic constituent. We need not refer to the importance and suggestiveness of Freund's discovery for pathological science, making further researches on this subject very desirable.—*Nature*, Oct. 14, 1886.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Menthol Plaster.

Messrs. Burroughs, Wellcome, and Co. have forwarded for our inspection a sample of a new form of porous plaster, in which menthol is the principal and most active ingredient. It is combined with medicinal gums in the plaster, and so it volatilises more slowly than otherwise would be the case. Its rubefacient, anti-spasmodic, and anti-neuralgic properties are said to be fully developed when the plaster is applied.

We have not yet had an opportunity of testing in practice the efficacy of this novel plaster, but we have little doubt that it will fulfil all reasonable expectations. It is manufactured at Lowell, Massachusetts, and is sold in neat tin-cases, which are practically air-tight.

Toilet Preparations of Borax and Carbolic Acid.

We have received from Messrs. F. C. Calvert and Co., of Manchester, samples of several novel and elegant preparations for toilet and disinfectant use.

The tablets or lamels of 20 per cent. carbolic medical soap have been for a long time in the market, and have won a deservedly high reputation. They are now to be obtained in Jahncke's patent tin pocket cases, which are exceedingly handy and neat.

"Dento-Phenolene" is a carbolised dentifrice, which is prepared with the purest phenol. A few drops on a moistened tooth-brush will cleanse the mouth and teeth, or about 20 drops in a wineglassful of water will make a pleasant mouth-wash or gargle. We have tried this dentifrice and can speak favourably of it.

"Boro-Phenol" is recommended as a soluble and safe disinfectant, combining the valuable antiseptic properties of borax and of carbolic acid. Of the latter it is stated to contain not less than 50 per cent. It is sold in perforated canisters at a cost of one shilling.

Lorimer's Compound Syrup of the Hypophosphites.

We have on a former occasion[a] spoken in terms of approval of this preparation. A riper and more extended experience of its therapeutical value enables us to recommend it as one of the best syrups of the hypophosphites which has yet been compounded. The composition of the syrup was given in our former notice.

Case Sheets.

Dr. E. MacDowel Cosgrave, of Dublin, some time ago designed a very convenient form of case sheets, and Messrs. Danielsson and Co., of Southampton Buildings, London, have recently published them. They consist of a pocket portfolio, with an alphabetical index. The first pocket is intended for holding a supply of the case sheets and a blotting pad; in the last pocket diagrams and charts, such as the admirable ones published by Messrs. Danielsson, can be kept. The design is a good one, and the case sheets cannot fail to become as popular as they are certainly useful.

Saint James' Rum.

Messrs. G. W. Christie and Co., of 25 Milton-street, London, E.C., have forwarded a sample of Saint James' Rum, and in doing so have announced that they have appointed Messrs. Bewley, Sons, and Co., Henry-street, Dublin, agents for this excellent alcoholic stimulant, which owes its name to the Saint James' Plantations in the Antilles, or West Indies.

The Saint James' Rum is very old and has a fine flavour, and is altogether free from that fatty character common to most rums.

To show its purity Messrs. Christie and Co. have submitted it to James Baynes, Esq., F.I.C., F.C.S. (Vice-President of the Society of Public Analysts), Arthur Hill Hassall, Esq., M.D., Professor Wanklyn, Charles H. Piesse, Esq., M.D., F.R.C.S., F.C.S., and many other analysts, who all pronounce it to be exceptionally fine, and of great value as a dietetic.

[a] See Vol. LXXXII., No. 175, July, 1886. Page 96.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. X.—*The Treatment of Vaginismus.*[a] By THOMAS MORE MADDEN, M.D., F.R.C.S.Ed.; Obstetric Physician, Mater Misericordiæ Hospital; Consultant, National Lying-in Hospital; Physician, Hospital for Sick Children, &c.

EXCESSIVE sensibility of the vaginal orifice and adjacent parts, more especially when associated with such spasmodic contraction of the sphincter vaginæ as to form an impediment to marital intercourse, or dyspareunia, occasionally becomes a matter of considerable gynæcological interest. In such cases the hyperæsthetic condition of the vaginal outlet is evinced even on the slightest attempt at local examination, and is most marked about the meatus urinarius, and in the vicinity of the orifice of the vulvo-vaginal glands and fourchettes, whence the hymen, if existent, projects upwards. The morbid condition of which these symptoms are pathognomonic, although clearly described by some of the older writers, was for many years ignored by gynæcologists, until its importance was re-discovered, and its treatment improved by the late Dr. Marion Sims, by whom the name it is now known by was applied to it. Since then, although much has been written on this complaint, its pathology and treatment are still, to a large extent, *sub judice.*

With regard to the pathology of the form of local hyperæsthesia understood by the term vaginismus, there are almost as many

[a] Read before the Obstetrical Section of the Academy of Medicine in Ireland, Friday, January 7, 1887.

divergent views as there have been writers on the subject. Thus, according to Marion Sims the symptoms of vaginismus are almost always neuromatous, whilst Dr. Alonzo Clarke, one of the ablest pathologists in America, who examined the vaginismus hymen frequently, could not find any enlarged nerve filaments running through it.

Mr. Lawson Tait, in the course of a recent discussion, in the British Gynæcological Society, on a paper of Dr. Bantock's on this subject, is reported as having expressed his regret that such a term as vaginismus had ever been coined. He had made eleven dissections, and found only in one of them a trace of the muscular fibres supposed to produce the affection. He believed it is due to fright or to disease of the vestibule, of which the most common is serpiginous vascular degeneration of the mucous membrane—an obstinate disease, ending in atrophic contraction of the vestibule. Sims, whose experience of this disease has never been exceeded, says :—"The most perfect examples of vaginismus that I have seen were uncomplicated with inflammation ; but I have met with several cases in which there was a redness or erythema at the fourchette. Usually the hymen is thick and voluminous, and when the finger is forced through it, its free border often feels as resistent as if bound by a fine cord or wire."

According to Dr. Emmet vaginismus is to be regarded purely as a symptom, denoting reflex irritation, of which the chief expression is an exaggerated sensitiveness about the hymen and vaginal outlet. As the irritation is transmitted through the sympathetic nerves, the effect is experienced at its terminal branches in the erectile tissue distributed about the entrance to the vagina. It is found only in anæmic and excessively nervous women, and in those who have in some manner overtaxed their nervous systems. Their general condition renders them peculiarly liable to neuralgia, of which the symptom under consideration is but a kindred ailment. The locality is determined as if it were by accident, or by some law of which we are ignorant. "It is an exception," adds Dr. Emmet, "to find any local exciting cause ; occasionally there may be some cicatricial tissue about the perinæum or neck of the uterus, or some local inflammation or disease of the vagina, vulva, meatus, urethra, or vesical neck."

Dr. Graily Hewitt, on the other hand, is of opinion that the essence of the disease is a local alteration or irritation of the nerves at the spot itself ; at the same time he also points out that

the condition in question is a hyperæsthesia of the parts, dependent not always on the same cause. The difficulty experienced in introducing the finger is dependent on the spasmodic contraction of the muscles. It has been described as most commonly present in individuals whose nervous system is generally in an easily excitable state. Dr. Ferguson believed that in cases of "irritable uterus," one of the seats of this neuralgic malady was the vagina itself, this latter being so exquisitely tender as to render intercourse intolerable. In Scanzoni's opinion the disorder especially accompanies anteversions, retroversions, flexions, or actual changes of the uterus itself, and that it is not rare in connection with spasmodic affections of the urethra, bladder, or rectum. Sir J. Y. Simpson in some instances found true small nodular neuromata under the mucous membrane.

For my own part I think the most rational explanation of symptoms of vaginismus is generally to be found in the hysterical temperament of the majority of those thus affected, although in some cases there is also present an abnormal condition of the pudic nerve, one branch of which runs along with the artery to the clitoris, whilst the other, or superficial perinæal nerve, is distributed to the perinæum and labia, in which its terminal branches ramify freely. This fact in the ætiology of the disease, although generally ignored by recent writers, is one the practical importance of which will be seen in connection with the treatment of vaginismus.

Treatment.—It was long since said by Dr. Marion Sims that whilst there is "no disease capable of producing so much unhappiness to both parties of the marriage contract, I am happy to state that I know of no serious trouble that can be cured so easily, so safely, and so certainly." With the first part of this sentence we must, I think, all agree, but with regard to the latter portion of it, in reference to the easy curability of the disease in question, I regret to say that my own experience is by no means as satisfactory, as in certain instances I have found no little difficulty in dealing with extreme cases of vaginismus by any of the plans of treatment generally recommended. It therefore appears to me that every case of vaginismus should be treated on its own merits—that is, with less reference to the name given to the disease than to its special causes and prominent symptoms in each individual instance. As a rule, in the treatment of such cases very undue importance is given to the local operative measures which the different theories

adopted by each special authority on the subject leads them to place exclusive reliance on in cases of this kind, whilst the constitutional treatment which is invariably necessary in all cases of well-marked vaginismus is too generally ignored. For whilst operative measures directed to the hyperæsthetic structures and adjoining parts—such as the excision of the hymen, division of the pudic nerve, destruction of erythematous and serpiginous patches, dissections out of neuromata, &c.—may each be indispensable in certain cases of vaginismus, in quite as many instances they are unnecessary; and from my own clinical experience I can vouch for the possibility in some cases of relieving the most intense dyspareunia resulting from this cause, so as to enable the patient to fulfil all her duties as a wife and eventually as a mother, without any operation beyond the forcible mechanical expansion of the vaginal canal. Before, however, resorting even to this expedient we should, in the first place, employ the sedative treatment, not only local but also general, which is indicated in all other local manifestations and consequences of constitutional nervous or hysterical disorders, and which, as I believe, is essential in nine-tenths of the cases of vaginismus that come before us, whilst in only one-tenth of them is any surgical or operative measure necessary.

Amongst the topical palliative remedies that may, conjointly with the constitutional nerve sedatives just referred to, be employed with a reasonable hope of advantage in these cases are the bi-daily use of warm baths and vaginal irrigations, the local application of a five per cent. solution of hydrochlorate of cocain or of glycerine of carbolic acid, or the introduction of suppositories of cocain and belladonna. When such palliative measures have been fairly tried without advantage, we may then resort to mechanical dilatation of the vaginal orifice and stretching of the pudic nerve. For this purpose, having first fully etherised the patient, a large sized Graily-Hewitt bivalve speculum should be introduced and expanded to its fullest extent. Then a tampon of absorbent lotion large enough to fill the speculum should be soaked in glycerine and passed up to the cervix, its lower end projecting through the external opening of the instrument. This, still fully expanded, should then be forcibly drawn out, leaving the central tampoon behind in the vagina. It need hardly be observed that this procedure invariably occasions severe pain. At the same time, however, it as certainly tears through some of the superficial submucous muscular fibres of the affected part, as well as effectually stretches the terminal

vaginal branches of the pudic nerve, and thus affords a generally efficient and safe method of overcoming the spasmodic contraction with which we have to deal in cases of vaginismus. Any subsequent contraction or hæmorrhage that may follow this procedure is sufficiently met by the tampon, which may be retained for at least twenty-four hours; and after some days, should there be still a continuance of vaginismus, the same method of treatment may be again repeated.

In other cases, however, this method of treatment does not suffice, and in course of these instances I have, with advantage, resorted to Sims's operation for vaginismus. This consists, as you are doubtless aware, in the removal of the hymen if present, which may be readily dissected out with a properly curved scissors, after which a vaginal glass or vulcanite plug must be worn until the parts are healed. The cicatrix resulting from this operation is then to be divided. For this purpose we must, as Sims recommends, place the patient (fully etherised), as for lithotomy, on the back; pass the index and middle fingers of the left hand into the vagina, separate them laterally, so as to dilate the vagina as widely as possible, putting the fourchette on the stretch; then with a common scalpel make a deep cut through the vaginal tissue on one side of the mesial line, bringing it from above downwards, and terminating at the raphe of the perinæum. This cut forms one side of a Y. Then pass the knife again into the vagina, still dilating with the fingers as before, and cut in like manner on the opposite side from above downwards, uniting the two incisions at or near the raphe, and prolonging them quite to the perinæal integument. Each cut will be about two inches long—*i.e.*, half an inch or more above the edge of the sphincter, half an inch over its fibres, and an inch from its lower edge to the perinæal raphe. Of course this will vary in different subjects according to the development of the parts in each. To perfect the cure it is necessary for the patient to wear for a time a properly adapted bougie or dilator.

Marion Sims' procedure, just described, has been modified and improved by Dr. Emmet, who also, after etherisation and placing the patient in the lithotomy position, introduces the speculum under the arch of the pubes, so as to bring the posterior wall of the vagina into view. The index finger is inserted within the anus, and the sphincter is pressed up against the posterior wall of the vagina. It is then easy to divide with scissors the fibres encircling the vagina on each side, just within the fourchette, and about three-

quarters of an inch apart. This does not allow a prolapse of the vaginal wall, as when the perinæum is lacerated, whilst it permits of an equal extent of dilatation of the outlet by the glass plug.

In some cases I have found the hæmorrhage following these operations sufficiently serious, and in one of these I have to thank my friend Dr. Horne, our Hon. Secretary, who was called in in my absence, for the arrest of very alarming loss of blood, occurring some hours after the operation, in the case of a young lady on whom I performed Sims's operation.

It should be observed, however, that even in cases of vaginismus so extreme as to effectually prevent complete marital intercourse, the disease is not necessarily an absolute barrier to impregnation. In one instance of this kind that came under my observation some years ago, so extreme was the local hyperæsthesia as not only to preclude the probability of complete cohabitation, but also to prevent the patient's submitting to any local treatment for the relief of the morbid condition. Nevertheless conception occurred, and I subsequently was called in to deliver her at full term, and in doing so was obliged to incise the still unruptured hymen, by which delivery was obstructed.

ART. XI.—*Notes on Famine Diseases.* By ALEXANDER PORTER, M.D., F.R.C.S., M.R.I.A.; Brigade Surgeon, I.M.S.; Fellow of the Madras University; and Professor of Medical Jurisprudence, Madras Medical College.

(*Continued from Vol. LXXXII., p. 476.*)

V. GENERAL PATHOLOGY OF THE ALVINE FLUXES.

THE general pathology of these 360 cases may be now considered. They consisted of 173 men, 123 women, and 64 children. The

Height. average height of the men was 5 feet 5 inches nearly, the extremes being 4 feet 7 inches, and 5 feet 9 inches; and of the women, 5 feet 0½ inch, the extremes being 4 feet 7 inches, and 5 feet 8 inches.

Age. No native knows his own age, but the average of the ages guessed in each case is 45 years for the men, and 44 years for the women, the extremes in both being 18 and 70 years. The average for the children is 3½ years, the extremes being 1 and 13 years.

The state of the body as to nutrition was emaciated, often to a

skeleton, in 310 cases; dropsical in 27; and, if not always plump, at least neither emaciated nor dropsical, in 23 cases; as shown:—

	Men	Women	Children
Emaciated - - -	151	100	59
Dropsical - - -	11	13	3
Plump - - -	11	10	2
	173	123	64

Weight.

The weight, in the emaciated cases, averaged 75¾ lbs. for the men, and 59½ lbs. for the women; in the dropsical, 104 lbs. nearly for the men, and fully 89 lbs. for the women; and in the rest, 92¾ lbs. for the men, and 79½ lbs. for the women.

Rigor mortis.

The state of the body as to rigor mortis varied a good deal without apparent cause. In some cases it was well marked and remained on for a long time, while in others it hardly appeared at all, and soon left; for instance, in case 83, an emaciated old woman, about sixty years of age, who died from bowel complaint with ulceration of the gut, rigor mortis was still present when the autopsy was made, fifteen hours after death, in the month of June; while in case 172, that of an emaciated old man of about the same age, who died from the same complaint a few days previously, the rigor mortis had gone off when the autopsy was made six hours after death. Again, in case No. 23, that of a boy, about eight years old, who died—a skeleton from pneumonia complicating diarrhœa—the rigor mortis had gone off when the *post mortem* was made two hours after death.

The skin was covered with scurf in most cases, but in many it was soft and silky, hanging loosely on the emaciated figure.

Skin diseases.

Itch is so common in natives that its presence or absence in these cases was not noted. The only skin disease observed was eczema of the scalp in one case, and, in a child, the skin was desquamating after small-pox. Bed sores were present in only two cases, a man and a woman; ulceration of the cornea in only two, a woman and a child; chronic ulcer of the leg in a woman, and a scrofulous ulcer of the chest in a child.

Ulcers.

Sloughing.

Sloughing of the instep was seen in a man with œdema of the feet. A slough was found protruding from the anus like a gangrenous prolapsus in a man, and sloughing of the tissues around the anus was seen in another man; neither was

a case of diphtheritic dysentery. Cancrum oris was seen in a child; and sloughing of the affected cheek in a woman with facial paralysis; and in another the gums were in a sloughy state—due, she admitted, to mercurial salivation.

Elephantiasis. Elephantiasis of one leg was seen in a man and a woman; and in both legs, with a burrowing abscess around one ankle, in 2 men. In a woman there was synovitis of the left knee-joint, and in another contusion of the right hip, both the results of accidents.

Œdema. Œdema of the feet was present in two-fifths of the emaciated cases—viz., in 66 men, 57 women, and 16 children; of these œdema of the hands was present as well in 6 men and 3 women, and of the face as well in 4 men and 2 women; the swelling extended to the knee and upwards in 3 men and 6 women, and was confined to one foot or leg in 2 men and 2 women.

Skull. *Scalp.* The scalp was thin and pale, quite milk-white in some cases, and on removing the calvarium no blood appeared on the meninges, as is usual when the sinuses are full, in 91 men, 68 women, and 54 children. These structures presented about the normal appearance in 11 men, 1 woman, and 1 child, while the scalp was pale and meninges bloody in 2 women and 1 child, and the scalp bloody and meninges pale in 5 men and 4 women. A variable amount of blood flowed from the several vessels on cutting through the scalp, and from the surface of the meninges and base of the skull on removing the calvarium and brain, in 66 men, 46 women, and 7 children. The blood flowed in large quantity in 7 men, 2 women, and 2 children. The percentages are as follows:—

	Men	Women	Children
Anæmic - - -	52·6	55·7	85·7
Hyperæmic - - -	36·4	37·7	11·1
Otherwise - - -	11·0	6·6	3·2
	100·0	100·0	100·0

Calvarium. The calvarium was eroded on its inner surface, difficult to separate from the meninges, requiring a knife in some cases, with deepening of the arterial grooves in 4 men and 2 women.

Arachnoid. On cutting through the meninges, serum was found in the cavity of the arachnoid in 144 men, 94 women, and 35 children, and blood with usually bloody fluid was found

in 1 man and 1 woman, leaving only 16 per cent. of the men, 22 per cent. of the women, and 44 per cent. of the children with this cavity quite free from effusion.

The quantity effused was considerable in about a sixth of these cases—viz., in 24 men, 16 women, and 6 children; of these the serum was bloody in 2 men, in the rest it was pale straw-coloured. It was in small amount, being confined to the base of the brain and not appearing till the tentorium had been cut through, in about a third of these adults, and a sixth of these children—viz., 48 men, 34 women, and 7 children; of these the serum was bloody in 1 man and 2 women, and pale in the rest. In all the other cases the serum was pale straw-coloured, except in 2 men in whom it was blood-tinged.

Subarachnoid. Serum.

There was effusion of serum beneath the arachnoid filling up the sulci of the brain, most marked on the vertex, less towards the base, in 121 men, 74 women, and 28 children; this was colourless or pale straw-coloured fluid in all, except that in 1 woman it was bloody. Thus there was no arachnoid or subarachnoid serous effusion present in 25 men, 25 women, and 27 children, or about one-sixth the adults and nearly half the children; in the latter, however, serum in small quantity would often escape observation, from it being frequently necessary to remove the meninges with the calvarium, from the close adhesion of these stuctures natural to children.

Ecchymosis.

In 17 men, 10 women, and 10 children, there was slight effusion of blood, generally appearing along the course of the veins as dusky red blotches of subarachnoid ecchymosis, and usually situated opposite the temples or on the cornua of the hemispheres, and, on dissection, found not to extend into the sulci of the brain or to form clots, except in the cases of 2 men, and 2 women, and 1 child; of these, in one man the ecchymosis extended into the sulci along the longitudinal fissure, and in the other it formed a small clot near the tip of the anterior cornu of the left hemisphere; in a woman a thin clot extended from the chorioid plexus over the back of the corpus callosum, and, in the other, there was a small soft clot in a sulcus on the anterior part of the right hemisphere.

Pia mater.

The larger vessels of the pia mater were found to be full in about a third of the cases—viz., in 65 men, 36 women, and 21 children; in 2 of the women the vessels were greatly distended, but the lateral veins only were full

in 6 men, 6 women, and 1 child. There was injection of the capillaries to pink or red over a greater or less part of the surface of the brain in about a tenth of the cases—viz., in 20 men, 12 women, and 6 children; in 1 of these men the dura mater was injected, dry and lustreless on the inner surface, while the larger vessels of the pia mater were empty, the capillaries being injected; and in a woman the arachnoid was dry, the pia mater being injected red with livid mottling extending from the vessels of the sulci. In other 9 men, 2 women, and 1 child, the surface of the brain was pink-coloured.

There was a white film over the brain from the visceral layer of the arachnoid being opaque in 8 men and 8 women, and in 2 men and 1 woman this layer was whitish and sodden from a subarachnoid serous effusion. In 3 men and 3 women the usual opacity along the longitudinal fissure extended outwards an inch or so beyond its usual limits. The adhesions between the parietal and visceral arachnoid, and of the latter across the fissure, were greater than usual in 4 men, 2 women, and 1 child; in 1 of the men a dropsical ventricle was opened from this cause in removing the brain, and in the child the arachnoid was thickened and adherent to hardened shrunken convolutions over the region of the left temple.

Brain-weight.

The subjoined table gives the average weight of the brain, with its ratio to average body-weight, in each of the three classes of adults:—

	Men ozs.	Women ozs.	Brain-weight to body-weight, 1 to Men ozs.	Women ozs.
Emaciated -	40·14	35·2	30·2	27·2
Plump -	40·45	38·32	36·6	33·3
Dropsical -	42·9	39·0	38·7	36·6

The extreme brain-weights all fall among the emaciated, naturally so as being by far the most numerous, and were for the men 54 ozs., with a ratio to body-weight of 1 to 28 in a religious mendicant of the Yediar caste, and 32 ozs. in each of two punkah coolies, one of the Reddy and one of the Pariah caste, with a ratio to their mean body-weight of 1 to 38·5, and for the women the extremes were 49·25, or with a ratio to body-weight of 1 to 20 nearly, in a coolie of the Pariah caste, and 27·75 ozs., with a ratio to body-weight of 1 to 37·4 in the wife of a Wuddiar.

From the above results it would appear that the brain wastes like other tissues of the body, but to a less extent, and no doubt to

this is due the effusion of serum into the arachnoid and subarachnoid cavities so frequently found in these cases. A comparison of brain-weights, &c., of Hindus with those of Europeans is reserved for subsequent consideration. The brain was noted

Soft. rather soft in 52 men, 30 per cent., 30 women, 24·5 per cent., and 19 children, 29·7 per cent. In 1 man there was a buff depressed convolution on the posterior corner of the right hemisphere, which extended to the ventricles, and cut soft, looking like a half-absorbed abscess, or apoplectic spot, with broken-down brain tissue, and in another there was a depressed

Firm. convolution on the vertex. It cut firm in 98 men, 56·6 per cent., 76 women, 62·3 per cent., and 33 children, 51·5 per cent. In 2 men it cut almost fibrous, in a child the convolutions on the left side of the hemisphere about its middle were shrunken and hardened, while the rest of the brain was rather soft and anæmic, and in a woman the convolutions were noted as remarkably prominent, while in another they were few and flat.

The substance was noted anæmic in 60 men, 57 women, and 25 children. Of these it had all the appearances of being in a state of yellow atrophy in an old man who died from dysentery, with lung, heart, and kidney complications. It was hyperæmic in 31 men, 16 women, and 13 children. The percentages are as follows:—

	Men	Women	Children
Anæmic -	34·6	46·7	39·0
Hyperæmic -	17·9	13·0	20·3

In 2 of the men the colour of the brain was dusky, and in another man and in a woman the surface was distinctly pigmented. In 25 men, 16 women, and 5 children, the injection was noted as normal, and in the rest it was presumably so, since it was not noted otherwise. A little pale serum was found in the lateral ventricle in 41 men, 24 women, and 7 children; and this was in abnormal

Ventricles. quantity in 2 men, 4 women, and 1 child. Of these in a man both lateral ventricles, and in a woman the right lateral ventricle, wer edilated, with thinned walls, fluctuating to the feel, and containing each about half a pint of pale serum; both died from uncomplicated diphtheritic dysentery, and no trace of tubercle was detected in either case.

In the men there were found 26 pairs, 24 right and

Chest pleura. 33 left pleuræ quite healthy, or 15 per cent. of cases in which both and 48 per cent. in which at least 1 pleura

was perfectly healthy; in the women there were 30 pairs, 7 right and 16 left pleuræ quite healthy, or 24·4 per cent. in which both and 43 per cent. in which at least 1 pleura was perfectly healthy; and in the children there were 39 pairs, 7 right and 3 left pleuræ quite healthy, or 61 per cent. in which both and 76·5 per cent. in which at least 1 pleura was perfectly healthy. In the men there was an effusion of serum into healthy-looking pleuræ in 19 pairs, 14 right and 20 left pleural sacs. The serum was reddish when in very small, and pale straw-coloured when in large, quantity; and it varied in amount from a tablespoonful to a quart, the average quantity found in the right pleural cavity being eight and in the left six fluid ounces. In the women there was a similar effusion in 28 pairs, 6 right and 10 left pleural sacs. In one case the serum was turbid from no apparent cause, in the others it was as in the men. The quantity in the right pleural sac averaged 11 and in the left $10\frac{1}{2}$ fluid ounces nearly. In the children there was a similar effusion in 8 cases into both pleural sacs in all, and in 1 pair only and 1 right pleural sac was the quantity as much as half a pint, the average for the whole being fully 4 ounces in the right pleural sac and barely 3 in the left.

Healthy.

Hydrothorax.

In the men there was similar effusion with some old points of adhesion in 7 pairs, 14 right and 11 left pleuræ, the quantity effused averaging fully 7 ozs. for the right and 10 ozs. for the left pleura. In the women there were similar adhesions and effusion in 7 pairs, 7 right and 4 left pleuræ, $7\frac{1}{2}$ ozs. and 5 ozs. being the average amount of serum in each respectively; and in the children there were similar adhesions and effusion in 2 cases only in both pleural sacs, the quantity of serum being small and the points of adhesion rather numerous.

With adhesions.

In all there was passive effusion into one or both pleural sacs in 67 men, 38·7 per cent., 52 women, 42·2 per cent., and 10 children, 15·6 per cent.; of these both sacs were implicated in 38 men, 22 per cent., 45 women, 36·6 per cent., and in all 10 children. In only about two-fifths of these adults—viz., in 28 men and 23 women—was the effusion half a pint and upwards, and in the majority of these—viz., in 18 men and 16 women—it was into both pleural cavities, the quantity in the right sac averaging barely 16 ozs. for the men and fully 23 ozs. for the women, and in the left sac fully 16 ozs. for the men and over 20 ozs. for the women.

Old adhesion. In the men there were points of adhesion, easily broken down, of old standing and not extensive, in 18 pairs, 42 right and 24 left pleuræ, in the women there were similar adhesions in 17 pairs, 17 right and 10 left pleuræ, and in the children in 2 pairs, 2 right and 4 left. In the men there were very firm adhesions of old standing, generally extensive and often requiring careful dissection, in 7 pairs, 7 right and 11 left pleuræ, in the women there were similar adhesions in 7 pairs, 7 right and 3 left pleuræ, and in the children in 1 pair, 2 right pleuræ and 1 left pleura. Hydrothorax was present in a certain number of these cases, as has been already seen above.

Summary. In all there were old adhesions present in one or both pleuræ in 107 men, 63 per cent., 61 women, 49·5 per cent., and 12 children, 18·7 per cent.; both sacs were implicated in about a fourth of these cases—viz., in 25 men, 17 women, and 3 children.

Recent effusion. There were products of recent effusion present in men in 6 pairs, 10 right and 4 left pleuræ, in women in 1 pair, 3 right and 1 left, and in children in two pairs, 1 right and 3 left pleuræ. The nature of the effusion was soft, lymphy adhesions in the children, with a little serum besides in 2 cases. In the women there was a mixture of old and recent adhesions in 2 cases, lymphy adhesions with turbid serum in 2, and a quantity of soft lymph with some old adhesions in the remaining case. In the men there was a simple admixture of recent and old adhesions in 5 cases, loss of lustre with injection of the pleura without effusion in 2 cases, points of recent adhesion without marked effusion in 6 cases, recent adhesions with effusion of amber serum, probably of old standing, and averaging half a pint in quantity, in 4 cases, and a quantity of soft lymph with effusion of turbid serum averaging about half a pint in 4 cases.

Cicatrices. There were cicatricial more or less puckered depressions on the apices of 7 pairs, 3 right and 4 left lungs in men, and of 5 pairs, 1 right and 2 left lungs in women.

Ecchymosis. There were spots or streaks of subpleural ecchymosis, mostly situated near the fissures, and often undergoing absorption, appearing as dark red pigmented or yellow streaks or spots—in men, in one pair, two right and four left lungs; in women, in one pair, one right and three left lungs; and in children, in two pairs.

Lungs healthy. Both lungs were healthy in only 26 men, 15 per cent.; 32 women, 26 per cent.; and 14 children, 22 per cent. The right lung alone was healthy in 6 men and 3 women, and the left lung in 10 men and 9 women, so that at least one lung was healthy in only 24 per cent. of the men and 35·7 per cent. of the women. The average weight of the right lung was 7·77 ozs. in the 32 men, and 6·9 ozs. in the 35 women; and of the left lung, 7·16 ozs. in the 36 men, and 6·2 ozs. in the 41 women.

Taking the average weights above given, the ratio of the average weight of the lungs to that of the emaciated bodies is 1 to 81 in the men, and 1 to 72½ in the women; or taking the weights of the pairs of healthy lungs and of their respective bodies, the ratio is 1 to 80 in the 26 men, and 1 to 75 in the 32 women. Contrast the ratios for Europeans—viz., 1 to 37 for men, and 1 to 43 for women (Quain).

Apneumatosis. Simple collapse of the lung tissue, usually of the posterior border of the lower or thin anterior margin of the upper lobe, but sometimes affecting a whole lobe, or even a whole lung, and often accompanied by more or less hydrothorax, was the only abnormal condition found in both lungs in 6 men, 9 women, and 4 children; in the right lung alone in 5 men, 2 women, and 1 child; and in the left lung in 11 men, 5 women, and 1 child. In these the part implicated was usually purplish in colour, tough and airless on section, with at most only a little blood exuding on pressure from the cut vessels, the lung remaining of about its normal weight. The average weight of the right lung was 9·63 ozs. in the 11 men, and 7·88 ozs. in the 11 women; and that of the left lung 8·25 ozs. in the 17 men, and 6·94 ozs. in the 14 women.

Analysis of cases. The whole lung except the apex was collapsed in a right and a left lung in 2 women. The collapse affected the whole lower lobe in both lungs in 3 men and 4 women; in the right lung only in 2 men; and in the left lung only in 3 men and a woman. It was confined to the posterior border in both lungs in 2 men, a woman, and a child; to that of the right lung in 4 men and a woman; and to that of the left lung in 7 men and 2 women; and it was confined to the thin lower margin of both lungs in a child, of the right lung in a child, and of the left lung in 2 women. The collapse was confined to the base of both lungs in a woman; to the inner surface of the left

lung in a man, and of the right lung in a woman; to the upper lobe along the fissure in the left lung in a woman; to the thin anterior margin in both lungs in a child; and to lobules and pieces of the thin margin in the right lung in a man and 2 women, and in the left lung in a child. The lower anterior tongue of the upper lobe was the seat of old collapse, with hypertrophy of the fibrous tissue and dilatation of the air-cells and bronchi, which were usually distended with inspissated mucus in both lungs in a woman and a child. This lesion was also found among cases not grouped under apneumatosis, in both lungs in 6 men and 3 women, in the right lung in 2 men and 4 women, and in the left lung in 1 man. In other diseased lungs apneumatosis was found affecting the posterior border of both lungs in 2 women, of the right lung in 3 men and a woman, and of the left lung in 2 men and a woman; and the whole lower lobe was implicated in both lungs in a woman, and in the left lung in another woman. The thin lower margin was collapsed, of the left lung in a man and a woman, and of the right lung in a woman. The collapse was confined to the inner surface of both lungs in a man, and to isolated lobules in various parts of the lung in 4 women.

Apneumatosis in diseased lungs.

There was simple, generally partial and hypostatic, congestion of both lungs in 6 men, 8 women, and 9 children; of the right lung alone in 4 men and 6 women; and of the left lung alone in 6 men and 2 women. In these cases the lung was little, if at all, above its normal weight; the cut surface was dry, yielding no serum, and at most only a little blood on pressure from the congested parts. Most of the acute primary cholera cases come under this head, the lungs being dusky in appearance, tarry blood exuding from the cut vessels of the root, very fully collapsed and consequently of small weight, the left lung in one case being under 5 ozs. The difference in weight between a fully collapsed lung and one not collapsed was in many cases observed to be fully an ounce and a quarter.

Simple congestion.

In the children the congestion was often confined to isolated lobules, giving the section of the lung a spotted appearance. The average weight of the right lung was 10 ozs. for the 10 men, and 9·4 ozs. for the 14 women; and of the left lung 9·1 ozs. for the 12 men, and 8·6 ozs. for the 10 women.

There was simple œdema of the lung, often confined to the dependent parts, and unaccompanied by con-

Simple œdema.

gestion or softening of the lung tissue, in both lungs in 3 men and 2 women, in the right lung alone in 3 men, and in the left lung alone in 1 man. In these cases the œdematous part pitted on pressure, and pale serum flowed freely from it on section. However, in two men there was an exception—the bronchi of both lungs in one, and of the right lung in the other, being loaded with serous muco-purulent fluid. The average weight of the right lung was 14·5 ozs. in the 6 men, and 15·35 ozs. in the 2 women; and of the left lung 18·7 ozs. in the 4 men, and 10·25 ozs. in the 2 women.

Apneumatosis with œdema.

There was serous effusion into collapsed lung tissue in both lungs in 6 men and 4 women, in the right lung alone in 4 men and 2 women, and in the left lung alone in 3 men. The average weight of the right lung was 15·25 ozs. in the 10 men, and 13·6 ozs. in the 6 women; and of the left lung 16·47 ozs. in the 9 men, and 12·46 ozs. in the 4 women. In one case there was some softening of the lung tissue of the left lung in a man. There was more or less congestion, mostly of dependent parts, with exudation on section of serum and blood from the cut surface without softening of the lung tissue, in both lungs in about a sixth of the adults and a seventh of the children—viz., in 29 men, 21 women, and 9 children; in the right lung alone in 18 men and 7 women, and in the left lung alone in 5 men and 8 women. The average weight of the right lung was 15·25 ozs. in the 47 men, and 12·28 ozs. in the 28 women; and of the left lung 13·17 ozs. in the 34 men, and 12 ozs. in the 29 women. In these cases the congestion and œdema relatively differed very considerably in different cases—in some there was much œdema with little, mostly hypostatic, congestion, while in others the congestion was general and perhaps considerable, but with comparatively little serous effusion.

Congestion with œdema.

Inflammatory œdema.

There was marked lividity and œdema, mostly of the posterior parts, often of the whole lower lobe, but sometimes of lobules appearing as circumscribed spots, accompanied by softening of the lung tissue in both lungs in 13 men, 3 women, and 1 child; it was confined to the right lung in 8 men and 2 women, and to the left lung in 7 men and 2 women. The average weight of the right lung was 22 ozs. in the 21 men, and 12·6 ozs. in the 5 women; and of the left lung 18·2 ozs. in the 20 men, and 12·87 ozs. in the 5 women.

Acute pneumonia. There was acute pneumonia present in both lungs in 9 men, 2 women, and 26 (or two-fifths) of the total children; in the right lung alone in 8 men and 3 women; and in the left lung in 9 men and 2 women. A whole lung was implicated in one or two cases, but in about a third of the adults and three-fourths of the children the disease was confined to lobules scattered all through the lung; the lower lobe was more frequently affected than the upper. In the majority the disease was in the stage of red hepatisation. The average weight of the right lung in the 17 men was 21·4 ozs., and in the 5 women, 17·3 ozs.; and of the left lung 16·75 ozs. in the 18 men, and 18·78 ozs. in the 4 women.

Chronic pneumonia. Chronic pneumonia was present in both lungs in 3 men, 2 women, and 1 child; was confined to the right lung in 5 men and 3 women, and to the left lung in 7 men and 1 woman. The disease often occupied a number of contiguous lobules or a whole lobe, converting it into a gray, semi-transparent, solid, tough mass, often containing cavities from dilatation or ulceration of the bronchi, but seldom presenting any trace of tubercles; in one case the right lung was carnified as well. The average weight of the right lung was 18·5 ozs. in the 8 men, and 12·5 ozs. in the 5 women; and of the left lung 11·7 ozs. in the 10 men, and 10·75 in the 3 women. The cause for the greater weight of the right lung in men is that there was a good deal of œdema conjoined in several cases, and, in fact, three of these are returned also under congestion with œdema.

Gangrene. Gangrene was present in both lungs in 2 men, and in the left lung in a third. In one pair of lungs the gangrenous spots were numerous, of the size of a tennis ball, and surrounded by livid œdematous tissue, and in the other pair the spots were little larger than a pea, and they looked like gangrenous tubercles. In the remaining case the gangrene appeared to be an advanced stage of inflammatory œdema, was of the size of a cricket ball and situated on the posterior border of the lower lobe of the left lung, which was so congested and œdematous as to be about four times its normal weight—viz., 30$\frac{1}{8}$ ozs. The average weight of the two right lungs was 15 ozs., and of the three left lungs 25 ozs.

Tubercular deposits in an inactive or chronic state were found in both lungs in 10 men and 9 women, in the right lung in 2 men, 3 women, and 1 child, and in the left lung in 2 men and 1 woman,

Latent phthisis.

and there was a calcified deposit in the apex of the left lung in a man not here included. In the child (a boy about five years old) there was a largish cavity in the apex of the right lung containing concretions, but no mucus, and lined by a smooth membrane with some thickening around, but no recent products. In the adults there was generally congestion, œdema, or other recent lesion of the lung also present; hence the average weight of the right lung was 15·17 ozs. in the 12 men and 11 ozs. in the 12 women, and of the left lung 14·7 in the 12 men and 9·35 ozs. in the 10 women. Three of the men are also included under congestion with œdema.

Apoplexy.

There were apoplectic spots in both lungs in two men, and in the right lung conjoined with lobar pneumonia in a third. The average weight of the three right lungs was 14·75 ozs., and of the two left lungs 13·6 ozs. The appearances in these cases were—in one pair of lungs, in the lower posterior margin of each, was a dark-red firm spot like a blood clot, the size of an orange, friable in the centre, and surrounded by pale œdematous tissue ; in the other pair the posterior border of each lung was studded with dark-red (nearly black) masses, firm but friable, and surrounded by healthy-looking lung tissue ; the lung was about double its normal weight, and similar spots were found in the thin lower margin of the right lung in the remaining case.

Pericardium.

The pericardium was pearly and shining, containing no serum in 18 men, 14 women, and 15 children ; and it was equally healthy-looking, but contained serum, in 153 men (88·4 per cent.), 109 women (88·6 per cent.), and 49 children (76·5 per cent.). The sac was distended in 4 men, 3 women, and 13 children ; it contained about four fluid ounces in 6 men and 1 woman, and about three ounces in 2 men and 4 women ; in the remainder the serum was in small quantity, averaging much less than half an ounce for each. The serum was very pale, straw-coloured when in large, and higher-coloured when in small, quantity, with the exception of one case (a man) in which it was smoky, and of another (a woman) in which it was blood-tinged and in large quantity, filling the sac. There were firm old adhesions of the pericardium to the heart all over in one case, and of the pericardium to the apex of the heart in another—both men.

There were products of recent inflammation in one case, in which there was firm but recent lymph adherent to the anterior

surface of the heart and to the pericardium opposite, with about 3 ozs. of bloody serum in the cavity. This man complained of dysentery, but not of his heart. His pulse was intermittent and flickering on admission, and he soon died, in very low flesh, with œdema of the feet.

Heart. The surface of the heart was devoid of fat in about two-fifths of the men, one-fifth of the women, and in nearly the whole of the children—viz., 71 men, 28 women, and 61 children. In 36 of these men and in *Œdema.* 20 of the women the fat was replaced by œdema, and in other 5 men and 2 women there was œdema present, making 41 men (23·7 per cent.) and 22 women (17·8 per cent.) in whom there was found effusion of serum into the cellular tissue covering the heart. There was no œdema here in the children.

Fat. There was only a trace of fat present in 24 men, 33 women, and 1 child; in 8 men and 15 women it was in considerable quantity, and in 70 men and 47 women it was in moderate amount and confined to the borders of the heart.

The white detachable lymphy deposit, known as the "soldier's spot," was present in about a sixth of the adults—viz., 28 men and 19 women; of these, in 9 men and 4 women the spots varied in number from two to six, and they were not confined to the anterior surface of the heart.

Cavities. The cavities of the heart were found empty in 48 men (22 per cent.), 49 women (40 per cent.), and 7 children (11 per cent.). In 7 men, 1 woman, and 1 child, the right side was empty, while the left contained dark blood and soft clots; while in 66 men (37 per cent.), 24 women (20 per cent.), and 17 children (26·5 per cent.), the left side was empty and the right contained blood and often pale clots. In 46 men (26·5 per cent.), 42 women (34 per cent,), and 38 children (59·3 per cent.), there was more or less blood with clots on both sides. In 1 woman and 3 children the cavities were noted distended with blood and clots. The colour of the blood in the cholera cases was very dark, like tar.

Walls. The walls were noted firm in 20 men, 8 women, and 3 children, and flabby in 33 men, 37 women, and 3 children. Among all the fatty-looking hearts examined under the microscope fatty degeneration was found present in only 2 men. In 45 per cent. of *Weight.* the men the heart was under 6 ozs. in weight—

averaging, in fact, only $5\frac{1}{8}$ ozs.—and in the remainder its weight averaged only 7 ozs.; and in 37·4 per cent. of the women it was under 5 ozs.—averaging, indeed, only 4·24 ozs.—and in the rest its weight averaged barely 6 ozs. The heart was, of course, weighed empty. For the total men its average weight is 6·17 ozs., with a ratio to average weight of emaciated bodies of 1 to 196, the extremes being 3 ozs., with a ratio to body-weight of 1 to 288 in a young agriculturist of the Komatty caste who died quite a skeleton from diphtheritic dysentery; and $14\frac{3}{8}$ ozs., with a ratio to body-weight of 1 to 83·5, in an emaciated cooly of the Pariah caste who died from diarrhœa with kidney disease. For the women the average weight is 5·3 ozs., with a ratio to average weight of emaciated bodies of 1 to 180, the extremes being 3 ozs. in two cases, with ratio to mean body-weight of 1 to 269, and $8\frac{3}{4}$ ozs., with ratio to body-weight of 1 to 150, in a cooly of the Reddy caste who died from diphtheritic dysentery. Quain gives the ratio for Europeans to be 1 to 158 for men, and 1 to 149 for women.

Abdomen. *Peritoneum.* *Passive effusion.*

The peritoneum was quite healthy in about two-fifths of the adults and two-thirds of the children—viz., in 73 men, 51 women, and 42 children; and it looked equally healthy, but contained serous effusion, in nearly the whole of the remainder—viz., in 96 men, 62 women, and 22 children. The serum was generally more or less pale straw-coloured; but it was whitish in 3 men and a woman, smoky in a man and a woman, turbid in 2 children, and stinking dirty-looking fluid in a third, in which perforation of the gut had occurred at death. No sign of recent peritonitis was present in any of these cases, but in 1 of the men there were some spots of organised lymph on the parietes and mesentery.

Quantity.

The effusion was little more than a mere moistening of the membrane, with a tablespoonful or two collected in the more dependent parts in nearly half these cases—viz., in 40 men, 32 women, and 10 children; in the remaining 56 men the quantity varied from half a pint to two gallons, the average being two quarts; in the 30 women it varied from half a pint to a gallon, the average being two pints and a half; and in the 12 children it varied from an ounce to a pint, the average being eight ounces nearly.

Old adhesion.

There were old bands of adhesion between the great omentum and the parietes in the flanks in 2 men and 4 women, and between the transverse colon and

parietes on either side in 1 man. There was injection of the subperitoneal vessels to the minutest capillaries all over the gut, mesentery, and parietes, without serous effusion or loss of lustre of the peritoneum, in 2 women who died from cholera, and less so in a third who died from diphtheritic dysentery, and in a fourth who died from simple diarrhœa. In 2 men and 4 women there was partial peritonitis, originating in approaching perforation of the gut from sloughing in the colon; usually there was little vascularity of the peritoneum; a quantity of whitish serum like thin pus was found in the cavity, and a deposit of lymph in the neighbourhood of the gut. In other cases of sloughing the appendices epiploicæ were dry and adherent to the outer surface of the colon in 3 men and a woman; and the omentum was adherent to the colon in 2 women, and the colon to the parietes in front in a man. In 1 of the women there was half a pint of pale straw-coloured effusion, but none in the other cases.

Recent effusion.

The stomach was noted large in 64 (or about a third) of the men, in 27 (or nearly a fifth) of the women, and in 3 children; of these it was of enormous size in 7 men and 4 women; it was of moderate size in 25 men, 13 women, and 8 children; and small in 83 (or nearly half) of the men, 82 (or nearly two-thirds) of the women, and 51 (or about five-sixths) of the children; of these it was very small and narrow (like a piece of intestine almost) in 3 men and 2 women. It was empty in fully two-fifths of the adults and two-thirds of the children—viz., in 75 men, 58 women, and 40 children; it contained fluid which was usually tinged with bile in 80 men (46 per cent.), 47 women (38 per cent.), and 16 children (25 per cent.). The fluid was like rice-water in four adults who died from cholera, and was reddish to brown in ten other adults. It contained more or less solid food in only about a tenth of the cases—viz., in 15 men, 15 women, and 6 children; and it was distended with gas in 4 men, 1 woman, and 2 children—all empty stomachs except two. Lumbrici were found in the stomachs of 13 men, varying in number from 1 to 16, the average being nearly 3; in 15 women, varying from 1 to 7, the average being exactly 3; and in 3 children, a total of 4.

Stomach.

Contents.

The mucous coat of the stomach was smooth in 34 men, 25 women, and 19 children, and it was in well-marked rugæ in 105 men, 84 women, and 40 children;

Mucous coat.

in the remainder this was not noted. It was pale and thin and often bile-stained in about half the cases—viz., in 86 men, 72 women, and 32 children; of these there were a few livid spots, mottles, or some arborescence seen mostly on the posterior wall, in 11 men and 5 women; and it was rose-coloured or had some tinge of pale red in 40 men, 33 women, and 22 children; in 2 of the men and 2 of the women there were some dark livid spots or mottles present also. It was congested in 36 men (20 per cent.), 14 women (11 per cent.), and 7 children (11 per cent.). The injection was confined to spots and patches in 5 men and 1 woman, to rugæ in 3 men and a child, and to the posterior wall in a man; in the remainder it was general and varied in colour from pinkish red to purple or dull red. In 4 men there were spots of congestion having the appearance of superficial ecchymosis into the mucous membrane; and in a woman in whom the mucous coat was pale and emphysematous the peritoneal surface of the stomach looked livid, possibly from *post mortem* changes, although rigor mortis had not disappeared.

There was more or less well-marked pigmentation of the mucous coat present in 12 men, 1 woman, and 1 child. In one old woman there was a perforating cicatrised ulcer of old standing, closed in by the pancreas, which thus became part of the posterior wall of the stomach.

[*To be concluded.*]

POISONING BY COCAIN.

A FEW cases have been recorded in which unpleasant symptoms have followed the use of cocain (Smidt, Rank). Thus, after subcutaneous injection of 2 ctgm. of cocain hydrochlorate, Blumenthal observed increased reflex excitability, muscular trembling, slight mydriasis, and a feeling of dizziness. Heymann wishing to operate on recurrent extensive papillomata in the larynx of a healthy boy, aged nine years and a half, brushed out the fauces and larynx with 5 grm. of a 20 per cent. solution (*i.e.*, 1 grm. of cocain hydrochlorate). The operation was scarcely finished when the boy began to reel off the seat, and when removed to a sofa lay in an apathetic somnolent condition for about five hours. Pupils were not dilated, and reacted well to light; cornea and skin normally sensitive to stimuli; pulse, respiration, and temperature slightly elevated. He could read and answer questions with some difficulty, but could not walk except with assistance. Next morning he awoke quite well.—*Berl. klin. Woch.*, 48, 1885.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Functions of the Brain. By DAVID FERRIER, M.D., LL.D., F.R.S. Second Edition, Re-written and Enlarged. London: Smith, Elder & Co. 1886. Pp. 498.

THIS book on its first appearance was recognised as one of the most remarkable contributions which had ever been made to English physiological literature, and the ten years which have elapsed since the publication of the first edition have served only to confirm the originally favourable judgment, and to still further establish the classical character of the work. In the present edition, which is considerably enlarged, and in most parts re-written, the principal doctrines of cerebral localisation formerly advocated remain unchanged. These doctrines have gradually made their way, and while ten years ago they were accepted by few physiologists without reserve, now they can scarcely be said to meet with any serious opposition. The brilliant achievements of what is known as brain surgery, and which are undoubtedly only the foretaste of far greater things, are due entirely to the work of physiologists, and would have been impossible had it not been for the labours of such men as Ferrier, Horsley, and Schäfer. Independently, then, of its great scientific and theoretical interest this book has a practical importance of the highest order, and claims the attention not only of the physiologist, but in equal degree of the physician and surgeon.

It would be impossible, within the limits of a short notice, to give a complete analysis of a work every page of which abounds in interesting and valuable matter. We shall aim only at indicating a few of the more important points—more particularly those in which this edition differs from the former one.

The opening chapter on the structure of the cerebro-spinal centres is greatly extended, and throughout the work a much more complete account of the anatomy of the nerve centres is now given than was the case in the first edition. Much of this

anatomical knowledge has been gained within the last ten years, and much of it is still of a very uncertain kind. In discussing these intricate anatomical problems Dr. Ferrier invariably displays that critical acumen which is one of his most distinguishing characteristics. The descriptions are given shortly, but with the utmost clearness and exactness, and are illustrated by a number of very beautiful new drawings, many of which are by Dr. Bevan Lewis.

In the chapter on the spinal cord are the details of an experiment on a monkey, in which a complete hemisection of the cord was made. The result confirmed the views of Brown-Séquard that the conductors of motion run on the same side, those of sensation on the opposite side, of the cord. The hyperæsthesia frequently observed on the side of section was not noticed in this experiment. Dr. Ferrier thinks that it is probable that in lower animals the sensory fibres are not so entirely crossed or the motor so entirely direct as in man and monkey, and that in this way the discrepancies in the results got by other physiologists may be explained.

The sensory paths run not in the posterior columns, but in the lateral tracts; not, however, mixed with the motor fibres, but probably, in the lateral limiting zone of Flechsig, in the angle formed by the anterior and posterior horns. The centripetal tract described by Gowers in the antero-lateral column Dr. Ferrier is inclined to consider as belonging to the direct cerebellar tract of Flechsig.

The existence of a muscular sense distinct from ordinary forms of sensibility, and having its paths in the anterior nerve roots, is denied.

The direct excitability of the anterior horns of gray matter is made at least highly probable by an ingenious experiment. The existence of a muscular tonus of a reflex character is considered to be proved by the experiments of Steinmann and of Tschiriew. The existence of special trophic centres or trophic nerves is looked on as more than doubtful.

In the chapter on the medulla oblongata we would notice only an interesting speculation on the cause of the apparently round-about path of the vaso-motor nerves for the head, and of the dilator nerves of the pupil, which, having their centre in the medulla oblongata, descend in the cord, and leaving it at the upper dorsal region ascend to the head in the cervical sympathetic.

On embryological and comparative anatomical, as well as on physiological, grounds it is shown "that the medulla oblongata should, as regards all organic functions, be looked upon as the direct continuation of the dorsal spinal cord, the cervical region being merely intercalated for the innervation of the upper extremities and their related parts."

The functions of the mesencephalon and cerebellum, as observed after the removal of the cerebral hemispheres, are mainly the maintenance of equilibrium, the co-ordination of locomotion, and the expression of emotions. To each of these a special section is devoted, but the results are essentially the same as those put forward in the first edition.

The difficult subject of the functions of the corpora quadrigemina is ably dealt with. An experiment in which, in a monkey, the anterior corpora were very accurately destroyed by the cautery, showed that besides being blind the animal manifested marked disturbance of station and locomotion, without impairment of other faculties. The absence of electrical excitability of the optic lobes found by some experimenters is due to their exhaustion by shock or hæmorrhage. It is shown that they are excitable not only by direct stimulation, but by vital stimuli, as the extension to them of inflammation from neighbouring parts. The development of the corpora quadrigemina varies directly with that of the spinal cord and inversely with that of the cerebral hemispheres. "They may be regarded as the ganglia of the fundamental system, with which, through the fillet and reticular formation, they are in more or less direct continuity. Through them the eyes are brought in relation with the fundamental sensory and motor tracts and centres of the spinal cord, and thus is furnished an anatomical basis for the highly complex and diversified responsive actions conditioned by impressions on the organs of vision." On the whole, the hypothesis is considered probable "that these ganglia form an essential portion of the mechanism of the co-ordination of retinal and general sensory impressions with the mesencephalic motor apparatus concerned in the complex responsive adjustments of equilibration and the other adaptive reactions of which animals are capable after removal of the higher encephalic centres."

The inco-ordination of movement observed by Flourens after removal of the whole or part of the cerebellum has been noticed by all subsequent experimenters. That this is due to the ablation and not to the irritation is shown by the symptoms manifesting

themselves, not while the injury is being inflicted, but immediately afterwards. The results of stimulation show that in the cerebellum numerous centres are contained, each of which resists displacement of the body in a certain direction, and whose associated action make station and locomotion possible. These centres act reflexly and independently of the will, in response to centripetal impressions, which reach them from various sources, more particularly from the eyes, semicircular canals, tactile organs, and viscera. The hypothesis of Ross, that these visceral impressions have their paths in Clarke's columns and the direct cerebellar tracts, receives great support from the recent anatomical researches of Gaskell, who shows that the visceral nerves arise only from that part of the cord in which Clarke's columns exist. After destruction of the cerebellum the faculty of co-ordination, previously carried out independently of the will, can be exercised by the agency of the cerebrum. Thus is explained the comparative absence of symptoms in cases of congenital atrophy or any chronic disease of the cerebellum.

The account of the physiology of the cerebrum begins with a chapter giving the history of the subject, the principal results got by the author in his experiments, and a consideration of the objections which have been made to his methods and conclusions. Since the first edition the methods have been enormously improved by the adoption of the strictest antiseptic precautions in carrying out the experiments. Owing to this, encephalitis is obviated and an absolute localisation of lesions is possible, and animals can be kept alive and in good health for an indefinite time after the most extensive mutilation of their brains.

In the first edition the visual centre was located in monkeys in the angular gyrus, and it was found that destruction of this convolution caused transient amblyopia in the opposite eye, while, after destruction on both sides, blindness was complete and permanent in both eyes. Since then Munk has placed the visual centre in the occipital lobe, and there are few points in cerebral physiology which have given rise to more discussion than the localisation of the centre for vision. Ferrier now finds (1) that stimulation of one angular gyrus causes turning of the head and eyes to the opposite side and generally contraction of the pupils. These phenomena are looked on as reflex, and due to a subjective visual impression. (2) Stimulation of the occipital lobe produces no effect. (3) Destruction of one angular gyrus causes very transient amblyopia or blindness in the opposite eye. Destruction of the corresponding opposite

gyrus reproduces the blindness in the first eye, and causes blindness in the opposite eye. Hence each angular convolution is in connection with both eyes. The blindness, however, after destruction of both angular gyri is temporary, and is more or less completely recovered from after a time. (4) Destruction of one or both occipital lobes does not affect vision. (5) Destruction of the angular gyrus and of the occipital lobe on the same side causes temporary amblyopia of the opposite eye and hemiopia of both eyes—the half of each retina corresponding to the side of lesion being blind. If the removal of the parts of the brain be complete this hemiopia is permanent; but as such complete removal is very difficult to accomplish, vision is usually more or less restored. Hence the visual centre comprises the entire occipito-angular region, and this region is in connection with the corresponding half of each retina, but also with the central part of the opposite retina, and to a less extent with the central part of the retina of the same side. The classical schema of Charcot, in explanation of the course of the conductors of visual impressions, will not harmonise with these results. Ferrier gives a new diagram which, however, is not to be looked on as an actual anatomical picture.

Dr. Ferrier criticises most severely the crude experiments and fantastic theories of Munk. Indeed, throughout the book this physiologist is handled rather roughly, although we must admit that he gets no more than his desserts.

As regards the auditory centre and its localisation in the superior temporo-sphenoidal convolution, we have nothing new.

The olfactory and gustatory centres are situated in the hippocampal lobule. The idea of Broca, that the inner root of the olfactory tract ended in the anterior part of the falciform lobe, is refuted. There is no decussation of the olfactory tracts; each lobe is in connection with the brain of its own side only.

The centre for common or tactile sensibility, whose seat was formerly placed with some probability in the hippocampal region, is now found to be much more extensive and to be situated in this region and the entire falciform lobe or gyrus fornicatus, this and the hippocampal convolution being looked on as one. Owing to the great difficulty and the severe character of the operation, it has not yet been possible to completely remove this convolution; but the more of it is taken away the more profound and lasting is the hemianæsthesia on the opposite side of the body. It would appear that every part of the body is represented in each part of

the tactile centre, and that there are not special centres for different parts.

As regards the motor centres, Ferrier's previous results remain for the most part unaltered. He has, however, shown that the cortical paralyses are permanent in the monkey as in man—and, as in the case of the latter, followed by secondary degeneration in the internal capsule and spinal cord, contraction of the paralysed limbs, and increased tendon reflexes. Horsley and Schäfer have shown that the centres for the movement of the trunk muscles, and for the movements of the limbs on the trunk, are situated in the marginal convolution behind the præfrontal region—those for the neck and upper limb most anteriorly, those for the posterior limb most posteriorly. Destruction of these centres on one side does not cause complete paralysis of opposite muscles, since the centres are bilaterally associated, and must be destroyed on both sides to cause complete paralysis.

In the post-frontal region of the convexity is situated the centre for the head and eyes. Just as the visual centre extends beyond the angular gyrus into the occipital lobe, so the head and eyes centre extends forwards into the præfrontal region. After injury of the frontal lobe a tract of descending degeneration is found occupying the knee of the internal capsule and the innermost portion of the pes cruris cerebri, and not extending beyond the upper part of the pons. For most ingenious and suggestive speculations on the connection between the paralysis of the movements of the head and eyes, and the loss of power of attention, and other mental disturbances which follow injury to the frontal lobe, we would refer to the chapter on the brain considered psychologically, which is full of the most interesting matter, but which does not admit of a short analysis.

From the position of the centre for the head and eyes in dogs, Ferrier is disposed to give up his former opinion that the crucial sulcus in this animal is the homologue of the fissure of Rolando in the monkey and in man. He looks for this homologue now in the coronal fissure or the anterior curved end of the superior curved fissure, agreeing in this view with Meynert and Parsch.

Irritation of the optic thalamus causes no movement, and it would appear that its destruction, if not involving the internal capsule, does not cause loss either of motion or of sensation beyond the disturbance of vision due to the relations between its posterior part and the optic tracts. Irritation of the corpus striatum causes

rigid contraction of all the muscles of the opposite side of the body and pleurosthotonus. Destruction of the corpus striatum seems to have a different effect in different animals. In those, such as men and monkeys, in whom the automatic movements are altogether subordinate to those due to conscious discrimination, the basal ganglia can be injured without much result if the internal capsule be untouched. But in such animals as the rabbit, in which all the movements are little above the stage of automatism, while lesion of the cortex of the brain causes slight and transitory paralysis only, injury to the basal ganglia produces complete and lasting hemiplegia. "Hence it is probable that the optic thalami, especially related to the sensory tracts, and the corpora striata, specially related to the motor tracts, represent in a subordinate manner all the sensory and motor centres of the cortex, and constitute together a sensori-motor mechanism subservient to the manifestation of all those forms of activity which do not imply conscious discrimination or true volition."

It will be seen from this that the old view of Meynert, that the basal ganglia are ganglia of interruption for fibres going to the cortex, is discarded, and that they are looked on, as they should be, as terminal centres co-ordinate with the cortex itself.

In the chapter on the brain considered psychologically, we would particularly call attention to the luminous explanation which is given of the phenomena of the different forms of aphasia and to the paragraphs on the control of ideation.

In the last chapter the homologies of the brain of man and of the monkey are considered, and the probable position of the different centres in the human brain, as well as the relation of its different parts to the surface of the cranium. It is shown that except in the anthropoid apes, who alone have an ascending limb to the fissure of Sylvius, there is no homologue in the monkey for the third frontal convolution in man. The angular gyrus in the monkey, which arches over the conjoined horizontal limb of the Sylvian fissure and the superior temporo-sphenoidal fissure, represents both the supra-marginal and the angular gyri in man. We may add that in the dog, cat, jackal, &c., the homologue of the angular gyrus in the monkey is not the fourth external convolution or that arching over the Sylvian fissure, but the third or supra-Sylvian gyrus—the fourth convolution being probably represented within the lips of the Sylvian fissure, which is so much deeper in men and apes than it is in the carnivora.

In concluding our very imperfect notice of this noble book, we feel how little justice our limited space has enabled us to do it. There are no words we could use too strong to express our admiration for a work which, in our opinion, exceeds in interest and importance any English work on a medical subject which has appeared within the last ten years.

Notes on the Physical Diagnosis of Lung Diseases. By J. Magee Finny, M.D. Dubl.; Fellow and Vice-President of the King and Queen's College of Physicians in Ireland; King's Professor of Practice of Medicine in the School of Physic, Ireland; Clinical Physician to Sir Patrick Dun's Hospital. London: H. K. Lewis. Dublin: Fannin & Co. 1887. Pp. 45.

This booklet, perhaps intentionally of such small size as to be easily carried in the pocket, is the latest addition to the numerous text-books on Physical Examination which have been published within recent years.

Intended in the first instance for the use of the students attending the clinique at Sir Patrick Dun's Hospital, these "Notes" will prove of use to all beginners in the art of physical examination. The plan of the work is briefly as follows:—On each left-hand page the technical terms used in the five methods of physical examination of the chest—Inspection, Mensuration, Palpation, Percussion, and Auscultation—are briefly defined; while their diagnostic and practical significance is succinctly stated on each opposite right-hand page.

We regret that the author should have adopted the terminology arranged by Dr. Douglas Powell, with the assistance of the late Dr. Mahomed, rather than the fuller and more cosmopolitan terminology adopted by the eighth International Congress at Copenhagen in 1884, and published in the Compte-Rendu of the Congress. Had he done so, we should not have been told (on page 26) that "*râle*" was a synonym for "rhonchus." The International Medical Congress distinctly and purposely restricted the latter term to *dry* sounds, while *râle* represented moist sounds.

Some orthographical—or, it may be, typographical—errors will need attention when the second edition is published. For example, "plural" for "pleural," on page 31; "tinckling" for "tinkling," on page 32, and also in the index; and on the same page "*Bruit d'aurain*" for "*Bruit d'airain*" (the "bell sound"), and "succes-

sion " for " succussion." In the Index also we notice " œgophony" for " ægophony," as the word is correctly spelled on page 34.

But these are minor points, and we have no hesitation in recommending Dr. Finny's " Notes on Physical Diagnosis " to all students of medicine in the wards of our hospitals.

The International Encyclopædia of Surgery. Edited by JOHN ASHHURST, jun., M.D. Vol. VI. London: Macmillan & Co. 1886.

WE have now received the last volume of this splendid work. It is just six years since the first was published, and we then had an excellent specimen of the material which has since followed. At the present moment it stands far ahead of all competitors for fulness and variety. There is the obvious objection to works of this kind that while they are being published they are falling behind in freshness of information. But this objection holds true of all treatises. In this work it may be urged with less force, because the articles are monographs in themselves, containing, as a rule, a very complete survey of their subject up to the time of publication. As a book of reference it may be safely relied on, because the authors are usually entitled to speak with the authority which pre-eminent knowledge of the special subject gives, and because of the careful supervision of the distinguished and versatile editor.

In the present volume are articles on Injuries and Diseases of the Œsophagus, by J. Solis-Cohen; Intestinal Obstruction, by the Editor; Injuries and Diseases of the Rectum, by W. Allingham (London); Urinary Calculus, by E. L. Keyes; Lithotrity, by W. H. Hingston; Injuries and Diseases of the Bladder and Prostate, by Reginald Harrison (Liverpool); Injuries and Diseases of the Urethra, by Simon Duplay (Paris); Injuries and Diseases of the Male Genitals, by H. Royes Bell (London); Injuries and Diseases of the Female Genitals, by Theophilus Parvin; the Cæsarean Section and its Substitutes, by Robert P. Harris; Ovarian and Uterine Tumours, by Charles Carroll Lee; Inflammatory Affections of the Bones, by L. Ollier (Lyons); Scrofulo-Tuberculous and other Structural Diseases of Bones, by Eugene Vincent (Lyons); Tumours of the Bones, by A. Poncet (Lyons); Orthopædic Surgery, by Frederic R. Fisher (London); Construction and Organisation of Hospitals, by Edward Cowles; Preparation

of Military Surgeons for Field Duties, by B. A. Clements; a History of Surgery, by George J. Fisher.

It will thus be seen that the volume contains contributions on many subjects. Mr. Harrison's observations on enlargement of the prostate and its treatment are excellent, and they enforce again, with the additional value which experience gives them, the principles which he has already advocated with a good deal of power. The history of surgery is a very elaborate performance. Our only exception to it is the very inadequate enumeration of deceased men who have done most for surgery in Ireland during the past century. It is amazing to find Robert W. Smith not even mentioned; while others, vastly beneath him as a scientific writer or a highly-educated surgeon, are set down as shining lights.

We congratulate the editor and the profession on the publication of this Encyclopædia. It was a huge undertaking, and seems fittingly to belong to the country of huge things. The work has been thoroughly well done, No one who sees much of surgery can regard his library as equipped without having these volumes on the shelves. If the Encyclopædia has a fault, it is that it is, perhaps, too full for reference. But, after all, it is better that this should be so, and that the surgeon should use his own judgment upon the reasons given for varying treatment than that he should be shut up to the necessary dogmatism of less extensive works.

Diseases of the Mouth, Throat, and Nose. By Dr. Philip Schech, Munich. Translated by R. H. Blaikie, M.D., F.R.C.S. Edin.; Surgeon to the Edinburgh Ear and Throat Dispensary. Edinburgh: Young J. Pentland. 1886.

A book of this sort has been long wanted, and we are surprised that it comes to us in the form of a translation. Book-writers in these countries there are in plenty, but none of them seems to have hit upon the idea of giving us such a book as this—sufficiently full, clearly written, and suited for those who, not being specialists, yet are called upon to treat many affections of the mouth, throat, and nose. The style is concise and attractive. We are not overwhelmed with the opinions of other authorities, but we have just the amount of dogmatism which is useful to those who have not time to weigh the value of conflicting opinions. The practitioner will find this book an admirable help in his work. It is right to

say that the translator has done his part very well. The English is easy and flowing, and does not bear the taint of obscurity, which too often is the only marked proof which a translator gives us that he knows something of German.

Lectures on Medical Pathology, delivered at the London Hospital in the Summer Session, 1885. By HENRY GAWEN SUTTON, M.B., F.R.C.P. London: Baillière, Tindall, and Cox. 1886. Pp. 215.

THE students of the London Hospital, in asking Mr. Sutton to publish these lectures, must have been either playing on him a cruel hoax, or have been anxious to show the World how badly they need a new lecturer on pathology. A more extraordinary mass of rubbish, and expressed in more extraordinary English, it has never been our lot to meet with.

We shall give a few extracts, taken at random, and leave our readers to judge whether this statement is justified or not.

On page 5, speaking of inflammation, the author says—

"So long as the circulation continues there is life; that applies to the part and to the body as a whole; but the circulation is maintained by that of the deeper and the outer world; and in the struggle for life there is a continual exercise and mental influence, a combining with the water which holds in suspension all that the tissues require. This union is kept up by what is known as 'vis nervosa.' These connecting actions between the subjective and the water of the blood-circulation and the nutrition of the tissues are always rhythmical, *i.e.*, regularly repeated. Blood circulation is carried on by light and heat, and both are rhythmical."

A few lines further on we are told that the cause of the increased heat in an inflamed part is "the excessive accumulation of energy in the part, an excessive accumulation of power which if it does not get vent, will destroy."

An injury to the sciatic nerve or to the spinal cord is spoken of as a "violent perturbation in the vis nervosa," and we are told that acute inflammation never occurs in a previously healthy body.

In the next chapter we are informed that "a vessel is a tube made up of plasma, muscle, and nerve." The term plasma seems to be used throughout the book for what is commonly called connective tissue.

The following are the causes of inflammation:—First, and most

common, venous congestion—"in consequence the tissues must get swelled into inflammation." Next, "degeneration of the tissues themselves, which acts by blocking the lymphatics; this is how fibroid degeneration brings on inflammation." "Morbid growths are another cause of inflammation—such as tubercle, which is degeneration of tissue, as is also cancer." On this view it seems to us that this heading and the last are the same. "Next perturbations in nervous energy, such as herpetic inflammations of the face or herpes of the throat," &c. "Mental shock may bring on pneumonia." "Another form (? cause) is mechanical injury." "Under mechanical injuries we may also class burns." "The condition of the blood itself may cause inflammation. Let us see how we know this, and remember 'knowledge is certainty.'" These are the conditions of the blood assigned as causes of inflammation, a good specimen of the author's knowledge:—Excessive watery condition; loss of red corpuscles; unhealthy change in salts; morbid change in albuminous constituents; excess of fibrin; excess of colourless corpuscles; excess of carbonic acid; excess of oxygen; excess of red corpuscles; various "fungous" changes.

In Chapter XI., on Pneumonia, the following "natural classification" is adopted:—(1) Lobar pneumonia, which "comes on very commonly sthenically—that is to say, strongly—and many patients recover quickly." (2) Lobular pneumonia, which "comes on asthenically, and more commonly ends fatally. That is, the typical form of pneumonia that occurs in pyæmia or phthisis." (3) Vesicular pneumonia, which "comes on where the lungs have much degenerated. or where vitality is feeble, as in children; it is the typical pneumonia of children." Another natural group is broncho-pneumonia, which may be vesicular, lobular, or lobar, and may even involve the pleura. "If we examine the lung by microscope in these cases of pleuro-pneumonia, the capillaries of the air-cells are immensely charged with red corpuscles and leucocytes, exudations of leucocytes with a granular matter around the air-cells; also swelling of the interlobular structures—that is, the parenchyma of the lung. Therefore this form of inflammation is termed interstitial pneumonia." "In cases of vesicular pneumonia of children, it is found commonly in association with rickets. In precocious children with a tubercular tendency—beautiful creatures that have been made restless and unduly sensitive, until at last they are sacrificed on the altar of wretched conceits." "Lobular pneumonia may supervene because

a vessel of the lung has been plugged, as in anæmia; or from thrombosis or other disease—it may be pyæmic;" and so on.

In his account of chronic Bright's disease the author pauses to "inculcate that we should always render honour where honour is due," in the present case to himself and Sir W. Gull, whose "manly thought and feeling" led to the discovery of arterio-capillary fibrosis—a discovery to which time has done justice, and which is not held in much honour outside the London Hospital. The following is the course of reasoning which led to this discovery:—

"The vessels are channels in connective plasma, provided with specialised structures to promote the safe travel of the blood, and to co-ordinate the serous supply according to the wants of the plasma and organic functions. And it was manifest to us that as the adventitious coats had become thickened by morbid growth, the connective plasma extending therefrom had become consequently invaded, thickened, and converted into a fibroid material, which had subsequently contracted and destroyed the organic forms."

This is how the chapter on Brain Diseases begins:—

"In proceeding to study brain disease, we may surely remark that the head is placed on the shoulders that—neck or nothing—we may be enabled to shoulder up to it. But the human shoulder comes by shouldering the earth, and not only taking its lime to make bone, but its activities also. But the efforts and the climbing must be done very gradually, for there are many pitfalls—break-neckers—until it is a brainless proceeding. We are often top-heavy because we are not light-footed enough, and cannot feel our way for safety and advancement because we are too thick-skinned; or we are intimidated and too conscious because too thin-skinned. We cannot resist a little fun, for there is so much in Nature."

We think our readers will excuse our not giving further extracts.

Manual of Bandaging. By C. HENRI LEONARD, A.M., M.D. Second Edition. London: Baillière, Tindall, and Cox, 20 King William-street, Strand. 1886.

THE author of this book is Professor of the Medical and Surgical Diseases of Women and Clinical Gynæcology in the Michigan College of Medicine. He appears, however, to have a more extended field than is thus indicated, if one may judge of his knowledge of general surgical appliances as shown in this Manual.

The letterpress is explicit, but is of much the same character as is to be found in other treatises on bandaging published everywhere. The illustrations are, however, specially good, and we do not think any one could fail to understand the mode of applying any bandage here figured. There are also chapters on poultice-making, the application of the plaster-jacket, &c.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Vol. VII. Insignarès–Leghorn. Washington: Government Printing Office. 1886. 8vo. Pp. 959.

The seventh volume of this wonderful work includes 14,688 author-titles, representing 5,987 volumes and 12,372 pamphlets. It also includes 6,371 subject-titles of separate books and pamphlets, and 34,903 titles of articles in periodicals.

The magnitude of the undertaking in which Surgeon J. S. Billings, of the United States Army, is engaged, may be realised from the fact that the seven volumes of the "Index Catalogue" already published contain 73,574 author-titles, representing 39,252 volumes and 59,697 pamphlets; besides 70,513 book-titles and no less than 254,057 Journal articles.

The list of the abbreviations of titles of periodicals and collective works used in indexing, prefixed to the present volume, is a consolidated list of all the abbreviations used in the first seven volumes of the Catalogue. This has been prepared to obviate the necessity of consulting, in some cases, several volumes in order to determine the precise scope of a given abbreviation.

Little fault can be found with the manner in which the work is brought out; but in the case of the present volume we notice some carelessness in the cutting of the pages, which spoils the general effect of the book.

The Modern Treatment of Stone in the Bladder by Litholapaxy. By P. J. Freyer, M.A., M.D., Bengal Medical Service; Civil Surgeon, Mussoorie. London: J. & A. Churchill, 11 New Burlington-street. 1886.

Dr. Freyer has now put into book form the papers on litholapaxy which he has already published, and which we have reviewed in this Journal. The success he has attained in the operation has attracted the attention of British surgeons; and

Mr. Cadge made marked reference to his work, in his recent lectures on Lithotomy and Lithotrity. Dr. Freyer is an enthusiast, and having regard to his results, justly so. We should be glad to see all our surgeons in India as industrious and energetic as he has shown himself to be. He has by his work made a distinct impression upon surgical practice, and we shall look for fresh records of his experience with pleasure. The book is dedicated to Dr. Robert M'Donnell, President of the Academy of Medicine in Ireland.

Ambulance Work. By R. LAWTON ROBERTS, M.D. 2nd edition. London: H. K. Lewis, 136 Gower-street, W.C. 1886.

THIS book consists of five lectures delivered to a class, under the St. John's Ambulance Association. They are well illustrated, and readable. There is a long chapter on the ambulance arrangements necessary in time of war. But looking at this book, we ask where are these ambulance lectures to stop? We shall not be surprised some day to see minor operations in surgery described in detail. In the preface to the first edition it is stated that these lectures were originally delivered to classes which "consisted chiefly of colliers, furnacemen, fitters, carpenters, blacksmiths, puddlers, brickmakers, and other representatives of the working portion of the population." Judging from the quality of the material provided for the exercise of their intelligence, the Welsh miners, &c., must be preternaturally clever people.

A Manual of Diseases of the Nervous System. By W. R. GOWERS, M.D., F.R.C.P. Vol. I. Diseases of the Spinal Cord and Nerves. London: J. & A. Churchill. 1886. Pp. 463.

WE can best give the scope and aim of this work in the words of the author:—

"This volume contains the first part of an attempt to give an account of diseases of the nervous system, sufficiently concise to be within the compass of the time-pressed student or busy practitioner, and yet adequate in its outline of a subject which has become wide and deep beyond any other part of medicine." It is modestly added, "Success in both aims can scarcely be more than approximate."

A work such as this is, of course, mainly a compilation, but in

the present case it is a compilation into every part of which the author's own experience enters to control and correct, as well as to explain and extend, the observations and deductions of other writers. Dr. Gowers' other works on nervous diseases give us the right to expect a very high order of merit in any book he writes, and we believe there will be no reader of this volume who will not admit that his expectations have been more than fulfilled, and that the aims of the author have been successful as far as success in such aims is possible.

In many points the views put forward in this manual differ from those generally held. Thus, we find the sensation of touch separated from that of pain, and while the paths for the latter are located in the antero-lateral ascending tract discovered by the author, the conductors of tactile sensibility are supposed to run in the postero-median, or Goll's, columns. Both kinds of conductors decussate in the cord. A muscular sensibility, giving the knowledge of the position of the limbs and the degree of contraction of the muscles, and distinct from all forms of ordinary sensation, is admitted, and its paths are believed to run a direct course in the cord, as was held by Dr. Brown-Séquard. These conductors are located partly in the postero-median columns, but those from the trunk muscles are supposed to run in the direct cerebellar tract—a view which the recent researches of Gaskell make very improbable. The ataxy in tabes dorsalis is believed to depend chiefly on the loss of this muscular sense, owing to the interruption of the conductors which convey impressions from the muscles to the cerebellum where co-ordination is automatically carried out.

The excessive reflexes observed in the various forms of spastic paralysis are attributed to a loss of the restraining influence usually exercised on the ganglionic cells of the cord by the terminal plexus connecting the pyramidal fibres with these cells.

There are very many other points of great theoretical interest in the sections on the pathology of the different diseases.

The sections on pathological anatomy are peculiarly good, and we question if there is to be found in any English book better accounts of the morbid changes which are to be found in the cord. We would particularly direct attention to the lucid exposition of the pathology of that most puzzling disease—primary spastic paralysis.

But, indeed, it would be invidious to praise one part more than another where all is so good. Brevity and conciseness, combined

with completeness and the most absolute clearness, are the characteristics of the work. Taken as a whole, it promises to be the most useful work on Diseases of the Nervous System which we possess. It is, like all Messrs. Churchill's publications, well brought out, and is illustrated by 171 admirably-executed engravings, a very large proportion of which are original.

Beobachtungen über die beim k k. Quecksilberwerke Idria vorkommenden Erkrankungen an Mercurialismus. Von DR. JOHANN BAAZ. Pp. 36.

THIS interesting paper, reprinted from the *Wiener medizinische Presse*, gives an account of the observations of the author during five years' practice among the mercury workers at Idria. He finds that only those men are affected who are exposed to the vapours of the mineral, while the miners and sorters of the ore (cinnabar) never suffer. He gives a description of the methods employed for the extraction of the pure metal, and shows the relative dangers run by the workmen who are employed in different parts of the process, and proves that this is always in proportion to the quantity of mercurial vapour present in the air. The affections which he observed are—

1. Stomatitis, ulcerations of a diphtheritic character along the edges of the gums and inner side of the cheeks, loosening and falling out of the teeth, and occasionally exfoliation of small portions of the jaw.

2. Ulceration of the pharynx, palate, and fauces.

3. Gastro-intestinal symptoms, metallic taste, loss of appetite, vomiting, diarrhœa, tenesmus and consequent loss of strength, emaciation, and anæmia.

4. Erethismus, sometimes wrongly called mercurial anæmia or chlorosis, characterised by pallor, emaciation, feebleness, depression, giddiness, hemicrania, lumbago, disagreeable sensations in arms and legs, stitches in the sides, and girdle sensations. Peculiar are the irritability, nervousness, shaking of hands, difficulty in articulation, and sleeplessness. These symptoms are often complicated by stomatitis and digestive disturbances. This condition rarely, but sometimes, terminates fatally.

5. Mercurial tremor. The tremors resemble in many respects those of paralysis agitans.

6. Cachexia.

Besides these and bronchial catarrh, the mercury does not cause any symptoms. Above all, there is no similarity between the symptoms of mercurial poisoning and those of constitutional syphilis.

It has been shown that mercury, or its salts, when brought into contact with the mucous membranes or with raw surfaces, becomes changed into mercuric chloride. The affections of the mouth, pharynx, and intestines are attributed to the local action of the corrosive sublimate, while the other symptoms are probably due to the action of the absorbed mercury on the nerve centres.

As to treatment, the most important point is to withdraw the patient from the further action of the mercury, and to give a plentiful supply of fresh air. Chlorate of potassium locally and internally; boric acid and thymol as washes for the mouth; good diet, quinine and iron; and for the nervous symptoms bromide of potassium, morphin, and chloral. Iodide of potassium was found of no use, and its employment is considered injurious, as likely to add the evils of iodism to those of mercurialism. Slighter cases recover readily, but cases of pronounced erethism and tremor never completely regain their health.

More important than treatment is prophylaxis. Rules for this are given, and it is satisfactory to learn that the cases of mercurial poisoning are becoming fewer year by year.

Except the actual workers with the metal no one at Idria suffers from mercurialism. Cases among the families of the workmen are rare, and are due to the drying of the soiled clothes of the men at the stoves in their rooms and the consequent volatilisation of the adherent mercury. The stories of how even the cows suffer, and abort or bring forth monstrous calves, are mere fables.

The mortality of the inhabitants of Idria was, in 1876, only 32 per thousand, less than that of Graz, Prague, or Trieste, and that, although, from their poverty, close intermarriages, and other causes, tubercular and scrofulous complaints are very common. Among the actual workmen, between 1879-1884, the mortality was only 14 per 1,000; while in Prussian Silesia among the coal, zinc, and iron miners, whose general sanitary condition is far superior to the Idrian miners, the mortality was 11 per 1,000. The cases of illness, however, were very numerous, 1,100 per 1,000 among the miners at Idria, as against 339 among the Silesian workmen. Among the iron workers at Neuberg, however, the cases of illness were, between 1866–1870, 1,290·7; at Eisenerz, 1,235; and at Pribram, 1,421 per 1,000—consequently much

greater than at Idria. Of actual mercurial diseases, stomatitis and the constitutional affections, erethism and tremor, there were 111·9 cases per 1,000. The gastro-intestinal cases from every cause, which were all tabulated together, were 380 per 1,000, of which about one-third were due to mercury. From all this it appears that the health of the mercury workers is not so bad as is generally assumed.

The paper concludes with some considerations on the elimination of mercury from the system, and on the methods for the detection of small traces of the metal in the excreta.

Outlines of Lectures on Physiology, with an Introductory Chapter on General Biology, and an Appendix containing Laboratory Exercises in Practical Physiology. By T. WESLEY MILLS, M.A., M.D. Montreal: W. Drysdale & Co. 1886. Pp. 200.

THIS little work contains the heads of the lectures given by the author in M'Gill College, Montreal. It resembles in its plan the syllabus recently published by Dr. Pye Smith and favourably noticed in this Journal. Such a work manifestly does not admit of review. It will be found useful not only by Professor Mills's own pupils, but by others who wish to have before them a systematic list of all those physiological questions to which they should be expected to be able to give answers. To teachers also the work will be doubtless welcome. If nothing else, it shows how comprehensive and thorough is the course of physiological instruction enjoyed by the students of medicine in Montreal.

Practical Pathology: an Introduction to the Practical Study of Morbid Anatomy and Histology. By JOHN LINDSAY STEVEN, M.D. Glasgow: James Maclehose & Sons. 1887. Pp. 266.

THIS little work, dedicated to Professor Weigert, is based on the course of instruction in Pathological Histology given at the Glasgow Western Infirmary by Dr. Coats and the author. It is divided into two parts. In the first a tolerably good account is given of the method of performing a *post mortem* examination, this method being that of Virchow, now universally adopted by pathologists. This is followed by chapters on histological technique, hardening tissues, cutting, staining, and mounting sections, and injecting the blood-vessels. In these chapters we

are glad to see the matter reduced to its true simplicity, and not to find the lists (often pages long) of instruments, apparatus, and re-agents so commonly given, which are calculated to terrify the boldest beginner, and nine-tenths of which may be dispensed with by the student. For hardening Dr. Steven recommends alcohol, or, as he calls it, methylated spirits, and uses chromic acid or its salts only exceptionally, in this following the advice of Friedländer. The second part of the volume gives the methods for examination of the different organs, and a description of the morbid appearances seen in them by the naked eye and with the microscope. This part is subdivided into two sections. The first, devoted to general morbid histology, contains chapters on Inflammation, Affections of the Blood and Circulation, Retrograde Metamorphoses, Tumours, and Parasites, including Bacteria.

In the second section the special morbid anatomy of the different organs is described.

In general the descriptions are fairly good, although rather meagre, and not always quite correct. The methods are given shortly, but usually with sufficient fulness. In some cases, however, more detail would have been desirable. For instance, in describing Weigert's new hæmatoxylin method for the spinal cord we are told that the piece of tissue must be hardened in Müller's fluid and cut without being put in water or alcohol, and we are advised to cut it by the celloidin method. It does not appear, however, how a tissue can be embedded in celloidin without being placed in alcohol. The book is intended for students working in a laboratory with their microscopes and preparations before them, and on this account it has no illustrations. We have no doubt that beginners will find it a great help in their practical work.

Transactions of the Clinical Society of London. Vol. XIX. London: Longmans, Green, & Co. 1886. Pp. 362.

This volume contains forty-nine communications, besides the notes of twenty-six living specimens described by card. As usual, the work done by the Society in the past session represents the steady progress, both in medicine and surgery, which is taking place. The volume contains many papers of great interest in both branches, but in number the surgical predominate over the medical contributions. The paper with which the volume opens is one by Mr. T. H. Sawtell, on a case of hæmatemesis with melæna, in

which blood was first vomited twenty-one and a half hours after birth. Dr. Samuel West describes a case of idiopathic purulent peritonitis in a child of ten years, with autopsy. No cause could be discovered to which to attribute the peritonitis, and the temperature never exceeded 100°. Abdominal section was performed without success. Mr. Morrant Baker describes a somewhat similar case. The abdomen was opened and the cavity washed out, but the patient appears to have been in a moribund state before operation, and he never rallied. Dr. Barlow and Mr. Godlee contribute a case of peritonitis, with suppuration round the vermiform appendix. This was also treated by abdominal incision and proved a complete success. An interesting point in connection with this case is that the peritoneum was cleansed by means of sponges soaked in $\frac{1}{500}$ solution of corrosive sublimate, without any harm being done to the membrane—a fact "that must encourage us in dealing freely with the peritoneum under similar circumstances." A case of jejunostomy is described by Mr. Golding-Bird, the patient dying on the ninth day—not as a result of the operation, but in consequence of some food having been injected by mistake into the peritoneal cavity. Dr. Angel Money relates a symptom he observed in a case of megrim and epilepsy, which consisted in an apparent momentary lengthening of a written or printed word, seemingly caused by a reduplication of one or more of the letters of the word. Dr. Hale White has a paper on hysterical pyrexia, and relates the case of a girl whose temperature on two occasions rose to 105° F. Dr. Goodhart relates a case of intussusception of the upper part of the jejunum from polypoid growth. The chief points of interest in the case were that the intussusception had lasted for twenty-one months, and also that its shape being reniform it was at one time considered to be a floating kidney. The case ended fatally. Mr. Barker relates a case of acute intestinal obstruction followed by acute general peritonitis. Abdominal section was performed, a volvulus of the jejunum was released, the peritoneum was thoroughly sponged out, and the patient made a rapid recovery. Mr. Jonathan Hutchinson reports a case of necrosis of the lower jaw from the medicinal use of phosphorus. The patient had been taking Kirby's pills for two years with short intermission. Dr. West has a paper on pneumothorax, illustrated by three cases. These are but a few selected papers, but they illustrate the general character of the volume. There is but one other which we feel deserves especial mention. It is Mr. Victor

Horsley's case of suppuration of the mastoid cells, complicated by thrombosis in the right lateral sinus, with septic embolism of the heart and left lung, in which recovery followed trephining of the mastoid process. Mr. Horsley's remarks on the prevention of septic embolism in such cases are well worthy of perusal.

La Limonea Cloroidrica nell l'ultima Pandemia di Colera; Esame delle Statistiche del dottor Romeo a Marsiglia e del dottor Virgilio a Pizzone a Volturno; con una Appendice di altre Statische ed un esame critico di quelle pubblicate dal Prof. Cantani. Pel dottore Cav. Ottavio de Stefano. Napoli. 1885. Pp. 136.

Dr. De Stefano is an enthusiast who has discovered an infallible cure for cholera, and who, in spite of opposition and ridicule, spares no labour or expense to communicate his discovery to medical mankind. We learn from the wrapper of this pamphlet that he is the author of thirteen other "opusculi," of which four are devoted to diphtheria and four to cholera. As to the latter disease, he holds that all the symptoms are the result of rapid abstraction of water from the blood, due to a morbid change of the mucous membrane of the small intestine, and that this effusion can be prevented or stopped by *hydrochloric acid*, which (before he had had an opportunity of trying it in cholera) he had found useful in the treatment of serous diarrhœa and catarrhal dysentery. In November, 1866, the desired opportunity came, and a carter, suffering from diarrhœa, vomiting, and cramps, was treated with "hydrochloric lemonade" only, and recovered; the symptoms disappearing immediately upon the administration of the acid. In the succeeding months fifty-four cases of cholera, more or less pronounced, and many of choleraic diarrhœa, were similarly treated, with the same result Now we all know that new remedies are often wonderfully successful in the hands of their discoverers, but fail, somehow, when others come to try them. In the present instance, however, Dr. Romeo at Marseilles, and Dr. Virgilio at Pizzone, adopted Dr. De Stefano's treatment with apparent success, and sent him the statistics of their practice, which are given in full in the pamphlet before us.

We shall give Dr. Romeo's own account of his first experience (in 1884) of the use of this drug:—

"The first to take this wonderful medicine was Signor Grassi Giacomo, a Tuscan, aged twenty-five. The unfortunate man having been two

days ill with severe cholera was almost a corpse. Scarcely had the hydrochloric lemonade been administered to him when the vomiting and diarrhœa ceased; after three hours he rose from his bed, and, accompanied by his comrades, came to offer me his thanks in presence of the entire Relief Committee. In the same house, on the following day, two other lives were saved. In one night I preserved from death fifty-two persons, accompanied throughout by Deputy Clovis Hugues, who exclaimed, 'Your treatment is like the word of God.' . . . I myself, in the evening of the 16th August, was severely attacked by the epidemic; the number of motions amounted to thirty-five in two and a half hours. The hydrochloric lemonade, with its pleasant acidity, restored my strength and life. On the following morning I resumed my work, though a report of my death had already spread abroad. . . . I cannot tell how many were saved by the same treatment. Suffice it only to add that a lady of Santa Marta-street, attacked by 'cholera fulminante,' after twelve hours' suffering, presented no sign of life. The hydrochloric lemonade was administered; after two days she resumed her work. My colleagues had declined to give her medicine, believing her lost."

Dr. Romeo's cases of 1884, as they appear with full particulars of name, date, &c., in his Table, numbered 334, with a mortality of 10 per cent.; and "if, as may reasonably be done, cases are excluded which were already dead at the time of his visit, or such as were found moribund, to whom it was thought useless or impossible to administer any remedy, the death-rate would scarcely reach 5 per cent." In Pizzone, a township of 1848 inhabitants, 71 cases of cholera occurred in 1884; 27 died (38 per cent.). Of 49 cases treated altogether with Dr. De Stefano's remedy, only 7 died (14 per cent.). In 1885 Dr. Romeo treated 85 cases of cholera or choleraic affections, of which he gives a list. He records 7 deaths—a mortality of 8·2 per cent; but it should be added that two men were found dead, reducing the rate of mortality under the treatment to 6.

Making all due allowance for the enthusiasm of a discoverer and the zeal of converts, and also for the fact (which is not concealed) that many of the cases were not cases of true cholera, and would probably have recovered under any treatment or none, we venture to think that Dr. De Stefano has suggested a remedy worthy of a trial. Those of us who have had practical experience of epidemic cholera will be glad to clutch at any straw—especially at this, which really looks not unlike a stick. The whole pamphlet, of which we have given a most imperfect outline, is worth reading

by all who may be called on to struggle through an epidemic of cholera; and what practitioner, now-a-days, can feel himself secure from that contingency? We may add that Italian medical works offer little difficulty to anyone possessing a fair knowledge of Latin.

The Appendix is an examination of certain statistics published (in the June and July number of *Morgagni*, 1885) by Professor Cantani, who recommends the treatment of cholera by intestinal or hypodermic injections. He collected 226 cases in which warm saline solutions were injected hypodermically, but from this number, our author maintains, 41 which had not reached the algide stage of the disease should be deducted. Of the remaining 177, 71 died (40 per cent.)—not a very brilliant or encouraging result, seeing that the total mortality of the epidemic of 1884 was 44·8 per cent. of 14,233 cases. Prof. Cantani gives a table of 88 cases (82 of which he calls "serious" and 6 "cholerine"), treated by "enteroclysis" of various drugs, in warm solutions, with the following results:—

Tannic acid,	40,	-	deaths,	37·5 per cent.
Boric acid,	27,	-	„	55·5 „
Vinegar,	1,	-	„	0·0 „
Carbolic acid,	8,	-	„	50·0 „
Alum,	4,	-	„	50·0 „
Corrosive Sublimate,	2,	-	„	100·0 „

The six cases of "cholerine" were treated with injections of hydrochloric acid diluted, and all recovered; but the Professor does not include them in his table. With these figures Dr. De Stefano triumphantly compares the results of his treatment in 1866–67, 1884, and 1885. By himself or his two followers 520 cases were treated with hydrochloric acid in dilution, with 47 deaths (9 per cent.).

Regional Surgery—Part III.—Abdomen and Lower Extremity. By F. A. Southam, M.A., M.D. London: J. & A. Churchill, 11 New Burlington-street. 1886.

Mr. Southam has now completed the work which he began some years ago. The book is intended for students, and deals with the surgery of regions. We have spoken very favourably of the preceding volumes, and we can recommend the whole work as one which will be found of great advantage by the student of surgery.

A Manual of Animal Vaccination; preceded by Considerations on Vaccination in General. By Dr. E. WARLOMONT, Member of the Royal Academy of Medicine, Belgium; Founder of the State Vaccine Institute of Belgium; Director of the "Institut Vaccinal de Belgique," at Brussels, &c. Translated and edited by ARTHUR J. HARRIES, M.D., Senior Assistant-Physician and Joint-Lecturer to St. John's Hospital for Diseases of the Skin; Consulting Physician to the Association for the Supply of Pure Vaccine Lymph; Honorary Secretary to the Willan Society of London; Treasurer to the Sloane Society; late Honorary Medical Officer to the Holloway and North Islington Dispensary, &c., &c. London: J. & A. Churchill, 11 New Bishop-street. 1885. Pp. 168.

THIS volume is a handy one; the paper, printing, and illustrations are all good. We strongly recommend the careful perusal of Dr. Warlomont's treatise, especially to those who are engaged in the use of either animal or humanized vaccine lymph.

The First Part of the work is taken up with General Observations on Vaccination, under which heading the author treats of the modes of origin of vaccine lymph; he then speaks of human vaccination, giving a succinct but clear account of the nature and course of the vaccine vessicle through its various stages; the choice of vaccinifer; the proper lymph to use; the several methods of inserting the vaccine, and the various ways of preserving it for future use.

In the Second Part of the book, Concerning Animal Vaccination, Chapter I. gives the definition, object, and reasons for the practice of animal vaccination. In this chapter, which is well worthy of being attentively studied, the author treats of vaccino-syphilis; and after relating the case of Dr. Bargioni, in whom a chancre was produced by the inoculation of "*blood*" taken from the cephalic vein of a patient exhibiting all the symptoms of constitutional syphilis, he says it is not proven that transmission of syphilis is possible when lymph only is used, as, "in order to admit that vaccine matter, properly so called, might be mixed with syphilitic matter, it would be necessary to have demonstrated that the germ of vaccine and that of syphilis can exist together and live well in the same medium. But that has not been demonstrated, and thus cannot be affirmed." Dr. Cory's experiments upon himself are then related, and the question, Does vaccine degenerate? is dealt with. Chapter II. speaks of the technics—

viz., the animals to be used and the methods of vaccinating calves and adult animals. Chapter III. describes the development of the vaccine eruption in the bovine species, and the progress of the inoculation. Chapter IV. treats of the various ways and means of collecting and preserving animal vaccine. In Chapter V. the author enters into a discussion on the objections made to animal vaccination, such as the danger of transmitting tuberculosis, charbon, or other diseases, and gives the possible sequelæ of normal vaccination.

Then follows a List of the chief works published on Vaccination, and the book is brought to a conclusion by the addition of an Appendix, in which Dr. Harries gives some minute and useful directions as to the mode of vaccination as carried out by him with all modern antiseptic precautions. In the Appendix also he discusses Dr. Cory's experiments, and shows, by careful reasoning, that as the exclusion of blood from the lymph used was not proved to microscopic demonstration, and also the possibility of contamination on the lancet used—taken in connection with the first experiment, in which normal vaccine vesicles followed the use of lymph taken from a syphilitic vaccinifer when no blood was drawn during the tapping of the vesicle—"the question of the inoculability of syphilis by means of vaccine lymph yet awaits its demonstration."

Dr. Harries has done good service by the way in which he has translated and brought before the profession this useful and practical work by Dr. Warlomont, the able authority on Animal Vaccination.

A. N. Montgomery.

The Colloquial Faculty for Languages; Cerebral Localisation and the Nature of Genius; Tentamen Physiologicum. By Walter Hayle Walshe, M.D. Second Edition, greatly enlarged. London: J. & A. Churchill. 1886. 12mo. Pp. 231.

In spite of the proverb about the *sutor* and his *crepida*, we welcome a *quasi*-popular work on a subject not strictly professional, from the distinguished author of "A Practical Treatise on the Diseases of the Heart and Great Vessels." The first of the three sections into which the book is divided is devoted to the discomfiture of those who believe "that foreign languages are easily acquirable, and actually are practically possessed, in greater or less profusion and in very faultless fashion, by crowds of people, especially among

ourselves." Our withers are unwrung. We hold no such belief; but we are inclined to think that the acquisition of a foreign tongue is not quite so hopelessly difficult or so phenomenally rare as Dr. Walshe maintains. The author's own difficulties in acquiring French seem to have been considerable, and his success not unquestionable, if we may judge from his assertion (p. 144) that *foie*, *foi*, and *fouet* have "practically the same sound." In his opinion that "the extreme difference of the vowel sounds in the two languages [English and French] will always prove a stumbling-block in the way of the Englishman striving to reproduce the native French pronunciation" (p. 176), he is at issue with no mean authority—M. Max O'Rell—who in his latest book, "Drat the Boys," says:—"Our vowels are bold, well-marked, always sounded the same, and, except *u*, like the English vowels, or so nearly like them that they cannot prevent an Englishman from understanding French and speaking it." We may add that the most amusing little book from which we have quoted itself illustrates the possibility of acquiring perfect mastery of a foreign language in circumstances far from being exceptionally favourable. While we fully admit that "smatterers in languages are as obtrusively rife as in other departments of knowledge," we are scarcely prepared to accept Dr. Walshe's pessimistic view that "few get beyond that initiatory stage, in assimilating a new language, in which the speaker *first thinks out in his vulgar tongue the words fitted to express his thought, and then translates them literally into the coveted foreign idiom*" (p. 17). Although, however, we are unable to agree altogether with our author, we have read this first section with interest and amusement, enlivened as it is with pungent remarks and humorous anecdotes. The second section is *not* amusing. It inquires into the causes of the "real rarity of conspicuous and indisputable linguistic accomplishment." It is "popular," and its conclusion will, no doubt, be "understanded of the people." "The rare endowment of easily and perfectly acquiring fresh languages apparently depends on the possession of a *plus* amount of structural and dynamic excellence of the ideating and emissive word-centres, aided by subordinate activities and conditions" (p. 178). The conditions regulating the colloquial faculty are very ably and fully—but we should scarcely say "popularly"—stated in this section; and the progress of cerebral localisation, from its earliest beginnings to its modern development, is well described.

In the third section the author claims to attempt, for the first time, to give a physiological answer to the question—What is Genius? "What structural factor, or group of factors, differentiates the brain of the man of genius?" Many definitions of Genius by previous writers, some of which amuse by their ineptitude, will be found in the first pages of the section. Dr. Walshe's conclusion is that Genius is "the well-ordered energy of certain brain-cells statically perfect and chemically differentiated by such and such elements or conditions of elements." We shall conclude our brief notice by a reference to the discussion on the hereditariness of genius (pp. 195 and 199), in which our author points out that the two leading inquirers into the subject—M. Lordat and Mr. Galton—have arrived at opposite conclusions, and states his own opinion that "in no one of the departments of art, literature, and science, tested statistically by Galton, are the cases adduced in support of the notion of hereditary transference of endowment either strikingly numerous or altogether free from the taint of insufficient proof."

How to Use a Galvanic Battery in Medicine and Surgery. By Herbert Tibbits, M.D. Third Edition. London: J. & A. Churchill. 1886.

Dr. Tibbits' book continues to find favour, and may be recommended to those who do not care to go deeply into the subject, as giving a fair and readable summary of the practical uses of electricity in medicine and surgery.

Journal of Cutaneous and Venereal Diseases. Edited by Drs. Piffard and Morrow. 1885. New York: W. Wood & Co.

This useful periodical holds its ground, and offers a valuable summary of recent investigations and methods of treatment in its own department. It is illustrated by a number of engravings and by a few good chromo-lithographs of rare cutaneous affections.

PART III.

HALF-YEARLY REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.

By Ringrose Atkins, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

(*Continued from page 107.*)

III. NEURO-PATHOLOGY AND PATHOLOGICAL ANATOMY.

Thomsen and Oppenheim on Sensory Anæsthesia.—The authors contribute a long article to the *Archiv. für Psych.* on the occurrence of sensory anæsthesia in diseases of the central nervous system, illustrated by fifty-two cases. The sensory anæsthesias form a typical group of symptoms, the most constant member of which is the bilateral concentric limitation of the visual field. True hemianæsthesias are rare; indeed, an absolute hemianæsthesia, in the sense that the other side of the body is unaffected, is unknown. Sensory anæsthesia is either a permanent condition, and then there are generally striking variations in its intensity and area of distribution from time to time; or more rarely it is a transient condition. It is important to observe that almost in every case psychical symptoms are present. There may be disturbances of consciousness—hallucinations, dream-like states, &c.; or disorders of the affective faculties—irritability, depression of spirits, feelings of apprehension, &c. The degree of anæsthesia runs parallel, as a rule, with the degree of psychical impairment.

Sensory anæsthesia (including hemianæsthesia) is not pathognomonic of hysteria and hystero-epilepsy, as many are apt to suppose. It is found in epilepsy, alcoholism, neurasthenia, chorea; in certain states characterised by continuous nervous apprehension, with restlessness; in cases of railway spine and head injuries; in multiple sclerosis; in organic brain disease; and as a sequela in various psychoses. The authors criticise Charcot's description of hysterical hemianæsthesia, and dissent from several of his conclusions. They aver that sensory anæsthesia occurs in three forms:—First, in con-

junction with certain psychical symptoms just mentioned, as a separate disease; second, in association with other functional neuroses and psychoses; and, third, in association with gross organic lesion of the central nervous system. In this last case it is not the result of any specially localised lesion, but of some general cerebral disturbance. The symptoms are accordingly of little value as yet in diagnosis or prognosis.—*Brain.*

On Disorders of Sensation in Cerebral Hemiplegia.—Drs. Legroux and Le Brun (*L'Encephale*) divide the disorders of sensation met with in hemiplegia into five groups:—

1. Sensation is unaffected, the paralysis being purely motor.

2. The anæsthesia affects the whole surface of the paralysed members.

3. The anæsthesia is absolute in one extreme segment (thigh or foot, for example), while it is much slighter in the middle segment, and still less in the other extreme segment. Thus, the foot may be absolutely anæsthetic, the leg less so, and the thigh almost unaffected. These different degrees of sensibility are not sharply defined, but fade gradually from one into another.

4. The external half of a limb has its sensibility normal or slightly enfeebled, whilst the internal half is absolutely anæsthetic.

5. The anæsthesia is in patches of irregular distribution, zones of absolute anæsthesia being surrounded by surface but slightly affected; or we may find patches on an anæsthetic limb, whose touch remains almost normal. In this variety the patches of altered sensibility have sharply-defined margins, and, instead of gradually passing away, the anæsthetic zones may shift about from day to day—a patch yesterday anæsthetic may to-day be normal.

The explanation of this oscillation of the anæsthesia is difficult; but since the cerebral lesion does not shift, it is concluded that the sensory disorders of hemiplegia do not obey the same laws as the motor affections, and do not correspond to fixed localised lesions of the cortex. These disorders of sensation present other particulars in which they differ from the motor affections. With respect to the mode of onset, for instance, we may often see the motor paralysis increase for three or four days before arriving at its maximum of intensity, while the anæsthesia attains its height at the very outset; or the motor disturbance increases while the anæsthesia is diminishing.

Many writers have shown the possibility of cure in these cases of anæsthesia by methods such as metallotherapy, usually applied in the

sensory affections of hysteria. The authors then show how, if small patches on these anæsthetic limbs be rapidly pricked with a needle, the sensation will return, and this even in long-standing cases of hemiplegia with contraction.

The anæsthesia of cerebral hemiplegia presents many points of resemblance to that of hysterical, syphilitic, or toxic origin, showing that it is due to some alteration in the blood, or to a sudden or gradual modification in the pressure in the cerebral vessels. The oscillations, fluctuations, and variability of the anæsthesia can be explained only by cerebral phenomena, which, though tangible enough, are certainly transient. This view is supported by a consideration of the sensory phenomena so often premonitory of hemiplegia due to atheromatous vessels, which, closely resembling those under consideration, is caused by an alteration in the cerebral circulation. Again, the anæsthesia seen at the outset of general paralysis is due to a congestion of the cortex preceding the chronic encephalitis. Thus it seems extremely probable that the disorders of sensation in question are due, in many cases at least, to an alteration of the cerebral blood pressure. Of course, it will be understood that those cases in which the anasthesia is caused by a lesion in the posterior part of the internal capsule are here excluded from consideration.—*Brain.*

Cortical Lesions of the Brain.—Dr. M. A. Starr, in the *American Journal of Medical Sciences*, gives an analysis of fifty cases of cerebral disease recorded in America, selecting only those in which there was a single lesion of moderate extent, of considerable duration, and determined with sufficient accuracy *post mortem*. A consideration of the symptoms both positive and negative in those cases leads him to the following conclusions :—

Lesions of the Frontal Lobes (excluding the ascending frontal convolution).—Twenty-three cases of various kinds : wounds, abscesses, tumours. Decided mental disturbance occurred in one-half the cases—a disturbance which may be described as a loss of self-control, and consequent change of character ; a loss of power to fix the attention or to recognise the import of an act in connection with other acts. No symptoms of aphasia ; no motor or sensory paralysis. Blindness when it occurred was referable to optic neuritis, and disturbance in the sense of smell to pressure on the olfactory bulb.

Lesions of Temporal Lobes (Eleven cases).—Such cases may exist without any localising symptoms ; but they may cause dis-

turbances of the special senses of hearing and of smell: of hearing, probably, when the first temporo-sphenoidal convolution is damaged; of smell, when the inner sphenoidal convolutions are damaged. It must be remembered, however, that the cases bearing on the localisation of the sense of smell are few, and that hearing may be impaired by pressure on the auditory nerve. In one case the supra-marginal convolution was affected also, and there was amnesic aphasia.

Lesions of Occipital Lobes (Ten cases).—In these cases the most prominent symptom was disturbance of vision. In three cases there were mental symptoms—loss of memory, occasional maniacal excitement, inability to recognise friends. Lesions of the angular gyrus was found in a case of paraphasia with agraphia; the patient at one time had lost memory of the appearance of words.

Lesions of the Parietal Lobes (Four cases).—No symptoms could be with certainty connected with the lesion.

The author will, in a future paper, consider lesions of the central convolutions. The present paper indicates, by the method of exclusion, that the centres for motion and for general sensation must lie here.

On Paralyses of Old People, and their Probable Relation with Uræmia.—Dr. Raymond (*Revue de Médecine*, No. 9, 1885) remarks that, till recently, it was a sort of clinical axiom, that uræmic cerebral phenomena were necessarily bilateral, and that, being produced by a toxic influence, they could not manifest themselves by any localised symptoms. In this article M. Raymond records eleven cases (in ten of which autopsies were made) tending to prove that uræmia may give rise to localised symptoms. He groups these cases into three classes:—In the first, an individual, apparently in good health (and almost always of advanced age), becomes suddenly apoplectic, and dies forthwith; or, after emerging hemiplegic from the coma, dies a little later. In a second class of cases sudden coma occurs. The patient recovers from this, but is left with a hemiplegia—in some cases accompanied by rigidity and contraction—and hemianæsthesia. He remains in this condition until he is again seized, after a variable duration of time, by well-marked uræmic symptoms, which quickly prove fatal. In M. Raymond's third class of cases a patient who has suffered at some previous date from some focal lesion, the symptoms of which have entirely passed off, becomes the subject of uræmia. He then manifests convulsive movements entirely limited to the side which

had been previously paralysed. The autopsy in such cases shows no *recent* change capable of explaining the unilateral motor symptoms.

In all these cases a fibrotic, and usually a contracted, kidney was found *post mortem*, with frequently evidences of an additional more recent subacute nephritis. In some cases there was hypertrophy of heart, and usually atheroma or thickening of the arteries in the cranial cavity.

In all there was well-marked œdema of the brain, with serous effusion ino the ventricles and into the subarachnoid space—a condition formerly described as serous apoplexy.

According to M. Raymond the serous effusion is the consequence of uræmic poisoning, itself the result of Bright's disease. The effusion compresses the cerebral arterioles; and as these vessels in aged people are already weakened by degenerative changes, a very slight pressure upon them suffices to disturb the regularity of the circulation in the brain substance, and to produce paralytic or other effects. Further, he suggests that in some cases arterial degeneration affects some vessels more than others, and that those the least weakened by disease are able to resist the pressure of the surrounding serous effusion, while those more extensively degenerated yield to its pressure.

In consequence, "ischæmia" will be produced in corresponding areas of brain substance, and will be evidenced clinically by hemiplegia or unilateral convulsions. In the case of the subjects of an old cerebral hæmorrhage or softening, although the resulting *symptoms* may have passed off, the area of brain around the lesion remains in a condition of relative bloodlessness, and then the slightest disturbance of intracranial pressure suffices to still further increase this, and paralytic or convulsive phenomena are produced, similar to those shown by the original lesion.

M. Raymond gives experimental proofs of his theory. After removing the inferior cervical ganglion on one side of a rabbit, so as to destroy the vaso-motor nerve supply of one of the cerebral hemispheres, he tied both ureters, so as to produce a uræmic condition. Convulsions ensued, limited to the half of the body opposite to that on which the cervical ganglion had been removed. In another set of experiments practised on the dog and on the rabbit he destroyed a portion of the cerebral cortex, producing paralysis in *one* limb, which gradually passed away. He then tied the jugular veins on the same side (an operation which in the dog

usually produces an incomplete and transient hemiplegia), and a well-marked hemiplegia resulted. The fore limb soon recovered its power, but the hind limb, which had been the one to suffer from the previous removal of brain substance, remained permanently paralysed. *Post mortem* only a general œdema was seen, especially pronounced in the region around the removed brain matter. M. Raymond's observations and experiments lead him to the following conclusions:—

1. Fatal attacks of apoplexy occur in aged persons, or attacks followed by hemiplegia of similar character to those from hæmorrhage or softening.

2. These attacks are due to the uræmic state.

3. *Post mortem* a general œdema of brain is found, or an old focal lesion.

4. The apoplectic attacks and the hemiplegia are the results of the œdema of the brain and the disturbance in the cerebral circulation produced by it. These circulatory troubles resolve themselves into want of oxygen in the cerebral blood.

5. A patient suffering from chronic renal disease, and who has suffered from a former hemiplegia, may, when he becomes uræmic, suffer from convulsions limited to the side of the former hemiplegia.

On Uræmic Hemiplegia and Partial Epilepsy.—In the same journal MM. Chantemesse and Tenneson combat the idea that uræmic poisoning can never show itself by localised symptoms; they point out that other toxic agents, such as lead and mercury, may attack the most vulnerable parts and produce local motor or sensory effects.

They record notes of six cases, in all of which there was either a local paralysis or Jacksonian epilepsy. In five an autopsy was obtained, but nothing was discovered except long-standing renal disease and general serous infiltration of the pia mater and brain substance. The hemiplegia was in two cases right-sided, in two cases it attacked the left side; the face and limbs were affected; the paralysis varied in amount from time to time, but gradually tended to pass away partially or completely.

The loss of sensibility was always less complete, and hemianæsthesia was appreciable only when loss of motor power was very well marked.

Twice conjugate deviation of eyes and rotation of the head were present—once towards, once away from, the paralysed side.

In two cases one-sided epileptic attacks occurred, coming on without warning, and affecting face, arm, and leg, but unaccompanied by any intellectual disturbance. The attacks lasted a few minutes; they recurred several times daily for a week till death occurred. In one case—that of a woman who became albuminuric during pregnancy—the hemiplegia was preceded by violent neuralgia of the fifth nerve and the brachial plexus.

The "albuminuric hemiplegia" may persist several days without observable change till death, or may pass off gradually to disappear altogether or sometimes to recur. What is most characteristic is a tendency to vary in amount—thus, the hemiplegia may pass off in the morning and return a few hours later in the day.

During the paralysis the ordinary signs of uræmia are absent, except the urinary changes. There is no headache, no vomiting or digestive disturbance, no anasarca, no lung affection. But the peculiar whiteness of skin of albuminurics and contraction of the pupils will render the diagnosis of uræmia almost certain. In no case was the fall in temperature observed which usually accompanies uræmic coma; on the contrary, at the outset of the symptoms the temperature always rose, and towards the fatal termination rose up as high as 40–41° C.

Post mortem examinations in the five cases only revealed a diffuse chronic interstitial nephritis, congestion of cerebral vessels, and œdema of brain substance. The onset of the symptoms by an apoplectic attack, the localisation of the paralysis to one side of the body, with slight anæsthesia and the rise of temperature, might all lead to a suspicion of softening from occlusion of vessels; but the myoses, the low specific gravity of the urine, and the albuminuria, will suggest uræmia.

As the two conditions do not exclude one another, the diagnosis in old persons may be impossible. In young persons the myoses, the visual disorders, and the abundant albuminuria, which precede the paralyses, the variations in degree of the latter, with possibly a little weakening or stiffness of limbs on the opposite side of the body, will make the diagnosis of uræmic poisoning.

From actual cerebral hæmorrhage the diagnosis is easier, as there is an immediate fall in temperature, and the paralysis is more permanent.

In one of the cases recorded, one-sided epileptic attacks occurred daily in a man of thirty-five, who had had syphilis. *Post mortem* only serous effusion was discoverable. In such a case cerebral

syphilis might have been diagnosticated but for the albuminuria and the facts pointed out.

MM. Chantemesse and Tenneson point out that these cases present different symptoms to those usually produced by uræmia or other toxæmia—the temperature is raised, the paralysis is localised, and coma may be absent, and indeed the symptoms are those not directly of toxæmia but of a mechanically-acting lesion, either structural or functional. They do not agree with M. Raymond that atheroma of arteries must be a necessary precedent for local œdema from uræmia, for three of their patients were under thirty-five years of age, and the autopsies showed the absence of degenerative changes in the cranial vessels. They suggest that these local affections are analogous to the sudden œdema of the eyelids and to the local transient patches of œdema or congestion which occur in the lungs of patients with Bright's disease.

In conclusion they affirm that, contrary to received opinion, a hemiplegia without rigidity and of sudden onset, just as is producible by hæmorrhage, may result from uræmic poisoning, and in some cases unilateral epileptic attacks are also produced. These phenomena must be connected with a circumscribed œdema, or at any rate by any œdema which predominates in one part of the brain, and such œdema is the consequence of a blood alteration, and is of uræmic origin.—*Brain.*

[A case illustrating the views of Raymond, Chantemesse, and Tenneson, above quoted, has just recently been under my observation. A gentleman in his eighty-second year, who had been for some years in failing health, suffering from a weak and intermittent action of the heart, with gradual decay of the nervous powers, both physical and mental, became affected one morning with mild diarrhœa, which quickly subsided, but which was followed by complete suppression of urine, which lasted for nearly thirty hours, there being previously no indications whatever of any renal mischief. Before the kidneys again began to act he became quite unconscious, though not actually comatose, and the respiration assumed the Cheyne-Stokes character. Within a few hours after it was noticed that the right arm was quite powerless, the limb lying helpless in whatever position it was placed, there being no rigidity. He continued to move the left arm vigorously, and was able to swallow nourishment well, though never opening his eyes or making any attempt at articulation. The pulse was quite as usual, and the temperature normal. In a short time after, the

right leg became also paralysed, and there was then a complete right hemiplegia without rigidity, or coma, or stertorous breathing. The pupils were contracted. The kidneys then began again to act, but there was no albumen found in the urine, which became gradually darker and darker in colour and foul smelling. This condition continued practically unchanged until death ensued, six days after the initial symptoms, the temperature rising a few hours before death to 101°, and the respirations becoming gradually shallower. There was no extension of the paralysis to the left side; reflex action was almost entirely abolished in the affected side. In this case there was undoubted evidence of arterial degeneration, and the sudden suppression of urine caused the localised cerebral œdema which led to the right hemiplegia. The onset and character of the symptoms, I think, clearly excluded the possibility of a focal lesion—hæmorrhage or softening—being the cause of the latter. Though albuminuria was absent, yet the complete suppression of urine (comparable to the tying of the ureters in Raymond's experiments) must have thrown back on the circulation sufficient urea to produce toxic effects.—*Rep.*]

Cerebral Rheumatism, and "Rheumatic Insanity."—In a series of lectures published in the *Gazette des Hôpitaux*, the late Professor Legrand Du Saulle calls attention to the various disorders of the intellect found in rheumatic and gouty patients. After first speaking against the prevailing tendency of considering insanity as a morbid entity, he says that more attention should be paid to the connection between mental affections and the various diatheses and dyscrasias. So he now wishes to call attention to the influence of rheumatism and gout in the production of these disorders. The attacks of cerebral rheumatism (rheumatic insanity) may be either over-acute, acute, sub-acute, or chronic. The meninges in this affection comport themselves in the same manner as serous membranes in other parts of the body—those of the joints, for instance—and may be attacked in the same manner. The lesion and process are the same in both. The same as that joint which is the weakest is the one generally attacked in rheumatic patients, so the meninges are generally affected in those whose nervous system is weakened through whatever cause. Therefore, heredity is an important ætiological factor. Hysterical and epileptic patients seem to form an exception. Those addicted to alcohol, on the contrary, are frequently affected. The better class of patients are those most frequently affected, for the reason that their brain is more used

and that they suffer more from cerebral fatigue. Therefore, intellectual pursuits and severe mental effort act as exciting causes. The over-acute and acute forms are preceded by certain prodromal symptoms. They rarely occur before the fifth day of a rheumatic attack, generally between the fifth and twentieth. Exceptionally high temperature and intensity of cardiac manifestations are significant, but restlessness of the patient, moral anxiety, pre-occupation for the future, transitory delirium, and persistent insomnia are to be looked upon with the greatest apprehension. The over-acute form is sometimes preceded by one or another of these symptoms, but generally it attacks the patient with intense suddenness. This is the rarest of all the forms, having occurred only five times in sixty-nine cases of cerebral rheumatism. The acute form occurred fifty-two times in the sixty-nine. It is preceded by the various symptoms—the temperature rises, the pulse increases, muscular twitchings occur, and the delirium appears. The delirium is generally of a low muttering type, which is exceptionally followed by convulsions, either eclamptic or choreic. Soon somnolence and coma set in. Death may occur in from twelve to twenty-four hours, or may not occur for five or six days. The sub-acute form is the one generally known as rheumatic insanity or rheumatic mania. It is exceedingly rare, according to Simon occurring once among four hundred insane, and once among one hundred rheumatic; but Ball considers even these figures too high. This form generally occurs when the rheumatic fever is on the decline; sometimes, however, it sets in during the rheumatic attack itself. The first symptoms occasionally consist in a violent delirium, somewhat similar to the delirium of the acute form of cerebral rheumatism; but more frequently the cerebral affection takes on a melancholic or depressive character. The author cites various cases of this form. The most prominent symptoms are—1. A depressive melancholic delirium. 2. Hallucinations, particularly of sight, but also of hearing, taste, smell, and touch. 3. A weakening of the intellectual faculties, always well-marked, and sometimes permanent. 4. Choreiform movements. 5. A profound cachexia. Generally this form terminates in recovery. When death does occur it is due to the progressive cachexia. The author then enters into the question whether rheumatic insanity is really a special form of insanity or a simple melancholia attacking persons so predisposed. This is decided by him in favour of its being a special form. "Rheumatic insanity is a reality."

IV. NEURO-THERAPEUTICS.

Urethan in Mental and Nervous Diseases.—Drs. Otto and Kœnig have studied the action of urethan in a large number of insane patients of different sorts. In some forms of paralysis four to eight grammes were given, but in a condition of strong excitement the action of the drug was doubtful. They found it useful in doses of from two to four grammes for epileptic patients, where there was a condition of no great depression. Larger doses were not found advisable on account of the unpleasant effects on the stomach. Urethan did good service in the excited conditions of idiotic children. In the paralysis of men with slight excitement small doses of from three to four grammes were found useful. In severer cases it was very untrustworthy, even in doses of ten and twelve grammes. Kraepelin has given urethan as a hypnotic, especially in mental diseases, and only in doses of one to three grammes (fifteen to forty-five grains). He never observed any unpleasant effects. Sleep occurred ten to fifteen minutes after swallowing the drug and continued several hours. He did not use it in cases of strong excitement. Kraepelin found that in 60 per cent. of paralytic cases urethan acted favourably. It was also serviceable in melancholia and in cases of great mental anxiety. As much as 77 per cent. of these cases were benefited by it. Rothenbiller found that urethan in doses of two to four grammes gave several hours' sleep to patients with slight excitement. He also used subcutaneous injections of a quarter of a gramme (nearly four grains). One to three injections insured six to eight hours' sleep.—*Centralblatt f. Nerv. Heilkd.* Abstr. in *Brit. Med. Jour.*

Cocain in Insanity—It has been stated by Dr. Brower (*Journ. of the American Med. Association*, Jan. 17, 1886) that the best results yet obtained from the drug have been in mental depression. Dr. A. B. Shaw speaks, with some degree of positiveness, of its value in the insanities with depression. Dr. Shaw (*St. Louis Courier of Medicine*, March, 1886) has, however, either changed his opinion, or Dr. Brower has misunderstood him, for he says:—"Nothing can be more supremely ridiculous than the attempt to cure insanity by the use of a drug that not only induces those conditions which predispose to insanity, and intensifies them where they already exist, but will, in a remarkably short time, produce insanity. I have seen a melancholiac attempt suicide by cutting the radial artery three times in ten days, while he was receiving

cocain to such an extent that it seriously impaired his desire for food, and his general nutrition and strength. While insane patients that could scarcely be induced to take food have, under the influence of cocain, partaken more freely of nourishment than they did before its administration, yet the daily use of cocain, even in small doses, seems to invariably impair the desire for food, although the contrary is generally stated by the patient, notwithstanding he is gradually losing weight and strength." Dr. Brower further states: Although the bad effect of the drug upon the digestion and assimilative processes, and upon the secretions, has frequently disappointed him in its use, he has given the drug several hours before eating in order to avoid anorexia, but even with this precaution it was frequently found impossible, while using it, to give that great abundance of food which is the most valuable therapeutic measure in melancholia. In a case of profound melancholia in a physician, aged forty-five years, the result of excessive professional work in a large country practice, cocain was given in one-grain doses three times a day, with pil. hydrarg., aloes, and strychnin. His recovery was rapid, and has continued for four months. A melancholiac woman, forty-eight years old, under this combined treatment recovered rapidly. The drug was administered in pill form, and probably because of its combination did not interfere with the free use of egg-nog, and other concentrated food in large quantities. Dr. Catlett, Fulton, Mo. (*Journ. of the American Med. Association*, Feb. 6, 1886), concludes, from an extensive use of cocain in insanity during the past six months:— 1. It is an agent possessed of great potency. It acts primarily with great power and celerity upon the cerebral and spinal nervous systems, and secondarily upon the heart and vascular systems. 2. From its potency and rapidity of action it is liable to initiate organic lesions and functional disturbances which are uncontrollable. It is not uniform in its action, and therefore is an uncertain agent. 3. Its effects are too transient and unstable to become a reliable and efficient remedy in constitutional or organic diseases. The aphrodisiac effects attributed to it have not been observed, neither have the intense nausea and inability to vomit been observed. Its permanent beneficial effects in melancholia and allied affections are not established facts, in his opinion. 4. As it is an agency of great potency, and as it is under trial to determine its limits of usefulness and danger, it should be prescribed with increasing precaution and discretion. The experience with cocain here

narrated is the experience with hyoscyamin retold. Used without due care on the extravagant laudations of experimenters destitute of analytic power, a reaction naturally occurred from its proving, like all neurotics, not destitute of danger where carelessly used. Like opium, it might, *à priori*, have been expected to lock up the gastro-intestinal secretion in some cases, but this was entirely ignored in the *furore* which followed the discovery of Koller. In the writer's opinion, fluid extract of coca has advantages which the alkaloid does not possess, and, given in combination with drugs which act on an atonic gastro-intestinal canal, is of true value in melancholia, but is decidedly contra-indicated in the epileptic, traumatic, phthisical, senile, menopause, hysterical, and other psychoses, with delusions of suspicion and persecution very generally fused together under that term. At the same time, it must also be admitted that in cases of melancholia, associated with lithæmia and pre-existing oxaluria, coca, or its alkaloid, would seem to be contra-indicated.—*Journ. Nerv. and Ment. Dis.*

IODOL.

Dr. Marcus contributes a paper to the *Berl. klin. Wochensch.*, 21, 1886, upon iodol, the new antiseptic discovered by Ciamician and Silber. It is a soft powder, yellowish brown in colour, soluble in alcohol, ether, and fats, but insoluble in water. It is almost odourless and devoid of taste. It decomposes by exposure to light or when heated to 140–150° C. Chemically it is a derivative of pyrrol (C_4H_5N), and is termed tetraiodpyrrol, C_4HI_4N. On the large scale it is prepared by the action of iodised iodide of potassium upon Dippel's animal oil. Mazzoni, Wolff, and Schmidt have reported favourably of its action and of its uses in surgical practice, and Marcus now contributes some pharmacological observations upon its mode of action. Comparing iodol with iodoform, Marcus has determined the fatal doses (for rabbits) of each to be respectively—iodol, 1·097–1·666 grm. per kilogram of body-weight, and of iodoform, 0·835–1·013 per kilogram. Iodoform, therefore, is more poisonous than iodol. Excretion of iodol is effected by the kidneys, and no injurious results are produced upon the organism.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

OBSTETRICAL SECTION.

President—A. V. Macan, M.B., M.A.O., Dubl.; F.K.Q.C.P.
Sectional Secretary—Andrew J. Horne, F.K.Q.C.P.

Opening Meeting, Friday, November 26, 1886.

The President in the Chair.

The late Dr. Richard Henry.

Dr. Kidd proposed, seconded by Dr. Kirkpatrick—That the members of the Obstetrical Section of the Academy of Medicine in Ireland desire to place on record their sense of the loss the Section has sustained in the recent death of Dr. Richard Henry, and to convey to his widow and father their warm expression of deep sympathy with them in their present bereavement.

Placenta Prævia.

Dr. Fleming read a paper on the Ætiology of Placenta Prævia, and then went on to enumerate the various ideas as to the source of the blood, giving as the most feasible that of Schrœder, namely:—

(1) That uterine contractions impel the blood from the place whence the placenta has been separated.

(2) That from the separated portion blood circulating through the chorion villi becomes lost.

(3) That unguarded examination may lacerate the placental tissue and so cause fœtal hæmorrhage.

The separation of the placenta is most satisfactorily explained as follows:—

(1) Owing to its formation the placenta cannot adapt itself to the extension of the organ.

(2) It is unable to retract with the cervical zone during labour, the membranes being still intact.

With regard to the treatment, until within recent years the obstetrician's choice was limited in the early stage, before the os was much dilated, to the following methods :—

(1) Plugging the vagina—which is ineffectual and increases the risk of sepsis.

(2) Forcible dilatation, version, and immediate extraction—fraught with extreme danger to the mother, as it increases tenfold the risk of *post-partnm* hæmorrhage, owing to laceration of the soft parts.

(3) Forcible dilatation and extraction by instruments—this method is, of course, open to the same objection as the last.

(4) Separation of the entire placenta—this certainly controlled the hæmorrhage, but inevitably destroyed the child.

I wish now to draw attention to the methods adopted in the Rotunda Hospital for several years past :—

(1) We rupture the membranes if the presentation is normal. This acts by allowing the placenta to retract within the lower segment, and by causing the presenting part of the fœtus to act as a plug. This is sufficient in a large number of cases.

(2) We perform intero-external version, bring down a leg to act as a plug, and wait for expulsion by natural efforts, or aid them very cautiously when the os is sufficiently dilated. Expulsion may not take place for a considerable time.

The advantages we claim for this treatment are :—(*a*) It abolishes the use of the tampon and lessens the risk of sepsis; (*b*) It allows early operation before much blood has been lost; (*c*) It arrests hæmorrhage; (*d*) It enables the patient to rally, gives the os time to dilate, and lessens the risk of post-partum hæmorrhage from lacerating the cervix or vaginal soft parts.

Dr. Louis, writing for the *American Journal of Obstetrics*, gives 4·5 per cent. as the maternal mortality after this method, and computes the infantile mortality to be 60 per cent., and draws the inference that the mortality of children born after natural efforts is not higher than in those in which immediate extraction has followed version; therefore, since the child's chance of survival is so frail, the mother should incur no risk on its account.

(3) In some cases—when everything favours extraction, such as a well-dilated os, and head low down—we sometimes deliver with forceps; and, in other cases, we find it necessary to diminish the calibre of the head by perforation and extract rapidly, but this I need not discuss, but what I do wish to emphasise is, that when called upon to treat a case of placenta prævia, especially in the early stage of labour, the most reliable way of bringing the patient to a satisfactory condition is by the "com-

bined method of version," and, having brought down an extremity in such a way as to form a plug, wait for the expulsion of the child by natural efforts, very cautiously aided. With reference to the statistics of the cases occurring in the Rotunda Hospital for the past three years, ending November 3, 1886—4,514 cases were delivered during this period, and in this collection, 23 cases of placenta prævia were observed in which there was a maternal mortality of 4 deaths—three of which were complicated with other serious affections, such as pleuro-pneumonia, sloughing fibroid tumour, and multiple fibroid, preventing contraction subsequently; and 1 patient was in a collapsed state when admitted. Out of these 23 cases 11 infants were lost.

Dr. More Madden said Dr. Fleming had hardly done justice to the treatment of placenta prævia in the Dublin School of Midwifery as it was 40 years ago. Nor need that school fear comparison with any other contemporary school. The old plan of the Dublin school, and the one he had found most certain, was to plug the vagina; and when the os was sufficienty dilated, if there should be any threatening symptoms, to introduce the hand, rupture the membranes, and turn the child and deliver.

Dr Byrne said that in partial implantations the treatment was quite easy, and should be to rupture the membranes, bring down the head by pressure, and then apply a forceps or turn according to circumstances. But the cases of complete implantation were very serious indeed. Where the implantation was complete the great object was to gain time; and therefore he thought the old plan of plugging was not a bad one. Where the placenta was firmly attached, rupturing the membranes might be attended with very great difficulty.

Dr. Kidd thought that very many patients were lost by waiting. When a small hæmorrhage occurred, and if they found that the placenta was attached to the os uteri, they should accomplish delivery as soon as possible. If the hæmorrhage was extensive, and if the os was sufficiently dilated, the next important thing was to turn. Having done that, the best thing was to wait. If the membranes could not be reached and ruptured, the best thing to do was to introduce a Barnes' bag. Where there was a complete presentation of the placenta, and it was found difficult to rupture the membranes, the placenta should be perforated. Sir James Simpson once, in conversation with him, said that to plug the vagina in a case of placenta prævia was "fool's practice." He thought Dr. Fleming had exaggerated the danger of lacerations. After hæmorrhage had gone on for some time, the os uteri became flaccid, and very rarely tore rather than yielded.

Dr. Dill said that in a case of placenta prævia, when the os was not dilated or dilatable, there was no plan of treatment which he would place before the tampon. But the filling up of the vagina with a firm

plug would not be enough. There should also be a pad in the vulva, and an abdominal T bandage above.

Dr. Mason observed that in cases of complete placental presentation, what Dr. Fleming had said summed up the treatment. If the cervix was small it should be artificially dilated; and then, by means of a Barnes' bag, the woman delivered at once. Cases had been lost by merely plugging and then leaving the woman without taking any other step.

Dr. William J. Smyly said the point upon which Dr. Fleming had laid most stress had been overlooked—namely, as to whether having turned the child they should proceed to effect delivery immediately or wait awhile.

The Section then adjourned.

PATHOLOGICAL SECTION.

President—Walter G. Smith, M.D.
Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, Dec. 3, 1886.

The President in the Chair.

Parasitic Disease of Lungs of Sheep.

Dr. Henry Bewley said that in the lungs of several sheep which were examined lately in the Physiological Laboratory of Trinity College, Dublin, a number of whitish or grayish nodules were found scattered through them, varying in size from $\frac{1}{16}$ to $\frac{1}{8}$-inch in diameter. On microscopic examination these nodules proved to be caused by a small nematode worm, from 15 to 17 mm. long, and extremely slender. The worm lay coiled up in the interior of a mass of apparently dried purulent matter. This mass was surrounded by a zone of elongated epithelioid cells, arranged in a radiating manner round the central mass. The epithelioid cells were embedded in a delicate fibrous reticulum; and here and there large giant cells were seen. Around these radiating cells was a zone of small lymphoid cells, embedded in fibrous tissue, and arranged in concentric layers. Outside these cells, in some of the specimens, was healthy lung tissue. In others the nodules were surrounded by catarrhal pneumonia. The worms in these nodules have no reproductive organs, and are apparently immature forms of strongylus filaria—a nematode worm that inhabits the bronchi and trachea of sheep and goats. Leuckart ("Die menschlichen Parasiten," 1867, Bd. II., p. 107) and Baillet, in a Dictionary of Veterinary Medicine, mention the existence of nodules in the lungs of sheep similar to those in the cases described above, caused

by the embryos of strongylus filaria; but they give no account of the histological changes in the lung produced by these parasites.

The PRESIDENT remarked that animal pathology was becoming increasingly associated with human pathology.

DR. MACSWINEY asked did Dr. Bewley look for this parasite in any other part of the tissue of the sheep? It would be interesting to know whether its *habitat* was confined to the pulmonary organs, or the parasite was ubiquitous.

DR. PURSER said it was difficult to suppose that the worm could have crept down through the animal's bronchial tubes. It was possible that some might have got into the lungs from the blood. They might have been swallowed, and might have bored their way out of the stomach into blood-vessels, and have been carried up to the lungs in that way. The reason why he thought this was that they had been all found under the pleura, where there were no bronchi. It must be supposed either that they had crept down through the bronchial tubes and got into the air-vessels, which was hardly conceivable; or that they had been carried up there through the blood-vessels. There was no difficulty in supposing that certain parasites would be in the lung and not in other parts of the body, because it was well known that different parasites had different tastes as regarded their places of living in the body.

DR. BEWLEY, in reply, said he did not examine any other part of the sheep's body for parasites. He would have liked to examine its trachea, and he hoped to be able to do so at some future time.

Stricture of the Œsophagus.

MR. EDGAR FLINN exhibited the œsophagus and stomach of a man who died in St. Michael's Hospital, Kingstown, from stricture of the œsophagus, due to malignant disease. The history of the stricture dated back four years, the act of deglutition becoming more and more difficult during the last three months of the patient's life. The stricture became very much contracted during the last three weeks of his existence—so much so that he became unable even to swallow fluid, and had to be fed by nutrient enemata. A *post mortem* examination was made, and it was found that the left lung was very much atrophied and collapsed. The walls of the œsophagus were greatly thickened and surrounded by a hardened mass matted together, which implicated the neighbouring structures. The œsophagus was very much narrowed at its lower fourth, and the most contracted part of the stricture was found to be about three-quarters of an inch from the cardiac orifice of the stomach, and would hardly admit of a small-sized pen-handle being passed through it. The stomach was enormously dilated—so much so that when the abdomen was opened it appeared to fill up the entire cavity, and was full of a brownish fluid, very offensive in odour. A large fruit stone was found

immediately contiguous, and somewhat beneath the pyloric orifice, embedded in a diverticulum. This fruit stone must have lain in this diverticulum for a long time, the *post mortem* appearances showing that its passage through the œsophagus would have been well-nigh impossible during the last two years of the patient's life; from its position near the pylorus, it exercised a considerable deal of pressure on the pyloric orifice, and thus, in great measure, the great dilatation of the stomach was to be accounted for. The liver was likewise very much enlarged. Dr. M'Kee, the Curator of the Royal College of Surgeons in Ireland, had made a microscopic examination of the parts, and had reported that the disease implicating the œsophagus was epithelioma.

The PRESIDENT remarked that the site of the disease in this case corresponded with that which was most common in malignant disease of the œsophagus—namely, the lower part of it.

DR. WRIGHT said that this man had been under his observation for seven years, and there was not a month during which he was not once or twice at the dispensary with him. On the first occasion on which he saw him he suffered from albuminuria, and all through, up to a year ago, his urine when boiled gave a deposit of one half of albumen. Seven years ago he suffered from a severe attack of general anasarca, for which he was successfully treated in St. Michael's Hospital. The first intimation that he had of anything being wrong with the man's stomach was about five years ago, when he came to the dispensary complaining of gastric pain and severe hæmatemesis. On several occasions afterwards he had severe hæmatemesis. For three or four months there was no stricture of the œsophagus, and then suddenly the stricture developed. That was four or five years ago. It then came on spasmodically. For days he could with difficulty swallow milk; and then the stricture would yield, and he would be able to swallow solids without much difficulty. The case was rather an obscure one, and the number of opinions held about it was amusing. Some diagnosticated cancer. He did not, because the man had always had a cachectic appearance. At the City of Dublin Hospital, too, there was a difference of opinion as to what was wrong with him. They there gave him injections of morphin; and after he came back under his (Dr. Wright's) care, he gave him similar injections every night for four months; and it was astonishing what a quantity of morphin he took, having regard to the enormous amount of albumen that was in his urine; and yet they barely obtained relief for him, without much sleep, for some hours. He then got better, and went out for a while; and afterwards he went to the Mater Misericordiæ Hospital, where they washed out his stomach with an alkaline solution. It apparently did him good, for he got better and went home for some months. Then the disease became acute, and he went to St. Michael's Hospital.

Mr. Doyle asked did the patient show any symptoms of old pleuritis?

Dr. Ball said one of the most interesting features in the case was the presence of the diverticulum in the pylorus. True diverticula were exceedingly rare. Mr. Moore, one or two years ago, brought before the Pathological Society of London a case of several true diverticula in the neighbourhood of the pylorus; and he suggested that they might be analogues of the multiple diverticula which were present in fishes. He (Dr. Ball) had not examined the present case sufficiently to see whether there were smaller diverticula in addition to the larger one which contained the fruit stone.

Dr. Purser said the most interesting point in the case was the dilatation of the stomach. In stricture of the œsophagus the stomach was usually contracted. There must have been some disease in this patient, long before the carcinoma of the œsophagus, which produced the dilatation of the stomach. It appeared to him that the pylorus was extraordinarily small. The stricture of the pylorus must have been either produced by disease or congenital. The pouch in the stomach was, he thought, not an abnormality, but the product of the fruit stone in its ineffectual efforts to get through the narrow pylorus.

Mr. Flinn, in reply, said he was not aware that the patient had had pleuritis or any affection of the chest at a previous date. He did not think there were any diverticula except the one where the fruit stone was.

Adenoma from the Mammary Gland of a Rat.

Mr. J. A. Scott exhibited a specimen of adenoma from the mammary gland of a rat. At the Carmichael College of Medicine a number of rats were kept. The animals were in the habit of gnawing through their cages and escaping, and others had to be got in their places; and the result was that from 100 to 200 rats had passed through their hands during the last two or three years. The rat from which the specimen was taken was brought to him by the porter. It had a big tumour in its abdomen, into which its legs seemed to be drawn up, very much in the way in which a penis sometimes was into a large hydrocele. Nevertheless, the animal had been several times pregnant, and was able to suckle its young. The rat was killed, and on opening it he found the large tumour which was before them. A section of the tumour showed it to be an ordinary adenoma. A part of the specimen showed the ordinary excretory mammary gland, with a quantity of fat; in other parts there was the gland tissue, and elsewhere a large quantity of fibrous tissue.

The President.—Did you ever observe any similar case amongst your numerous family of rats before?

Mr. Scott said he had invariably opened the dead rats, particularly the females, in order to secure the embryos, but he had never before

met with a tumour of the mammary gland in any of them. He did meet with an ovarian tumour, and he hoped to bring it before the Section. He believed the late Dr. Harvey found something of the sort, but the bottle containing the specimen had been lost.

Simultaneous Fracture of both Clavicles.

Dr. E. H. Bennett submitted a cast exhibiting this lesion, taken from a man who was treated in Sir P. Dun's Hospital, and also the clavicles of a little girl, aged six, who had sustained a complete fracture of one clavicle, and an incomplete fracture of the opposite, by being run over by a tram-car. Having detailed the history and mechanism of the injuries, Dr. Bennett directed attention to the fact that in the first case perfect union had been obtained in both fractures, with but little deformity—a fact of importance, seeing that out of eighteen cases collected by Gurlt, no less than eight had resulted in non-union of the fractures—a result clearly attributable to the difficulty of maintaining the parts at rest in such an injury without the most careful nursing. Dr. Bennett exhibited at the same time a series of injuries of the costal cartilages taken from the body of the child who had had the collar-bone broken. On the right side, the second, third, and fourth cartilages were broken transversely, while the first was dislocated from its rib. On the opposite side one of the lower cartilages had been also dislocated from its rib, and one had sustained a partial fracture. Dr. Bennett directed particular attention to the dislocation of the cartilages from the ribs, as the occurrence of such dislocation had been denied by Malgaigne. He also directed special attention to the incomplete fracture of one of the cartilages, not on account of any great practical importance attaching to the injury, but as serving to complete the analogy between these injuries and fractures of bone.

Dr. MacSwiney asked did Malgaigne, in his criticism, or rather dogmatic statement, that dislocation of the cartilage never occurred, refer to adults or children?

Dr. Ball said that Dr. Bennett's first case was in Sir Patrick Dun's Hospital under his (Dr. Ball's) care, and they had considerable difficulty in keeping the fragments in place; and very probably there would not have been any union of them at all but for the kindness of other patients in the ward, one of whom frequently gave the man a smoke.

Dr. Purser said he could not see anything *à priori* absurd in the separation of the cartilage from the bone, particularly in children. He would suppose that injury more apt to occur in children than in adults. The point where the growing cartilage joined the bone was rather a weak place. The cartilage itself was softened, and the new bone, where it developed into a cartilage, was very slight, so that it would be very easy for such a separation to take place in children. Dr. Bennett had

made a fine distinction between the separation of the cartilage from the bone and the separation of the cartilage leaving a little bit of it in the cup. There was nothing peculiar in the cup, for when ossification was advancing periosteal ossification advanced along with the cartilaginous, and the fracture was the same thing whether it was scooped out from the cup or broken across. He rather wondered that the injury was not more common in young children, and that the movements of a child were not sometimes enough to tear off the periosteum.

Mr. Flinn mentioned that about eight years ago a case came under his notice—that of a coal-miner, in Staffordshire. While engaged in a lying position in what was called "holing," a very large piece of coal fell on him and fractured both his clavicles—the one at the sternal end and the other at the acromial end. The lower third of his femur was also fractured.

Dr. MacSwiney.—Did the fractures of the clavicle unite?

Mr. Flinn.—Yes.

Dr. Bennett, in reply, said that Malgaigne gave four cases of this fracture at the age of seventeen, which was the earliest age that he recorded. It was an eminently difficult thing to keep it reduced, for, although after the individual had made a full breath the parts would slip into their places, when the chest collapsed they would slip out again.

Cerebral Meningitis and Abscess.

Dr. Quinlan exhibited a case of cerebral meningitis and abscess. He said it was taken from the body of a scrofulous, starved-looking young man, aged twenty-three, who was admitted into St. Vincent's Hospital on the 23rd of November. He had for many months had an offensive purulent discharge from his right ear, and was on admission suffering from the most agonising pain, radiating from the ear to the frontal, parietal, and occipital regions. His pulse and temperature were above normal, but he was quite clear in his mind, and had no convulsions or muscular stiffness. On the morning of the 25th November, about 8 30 a.m., he became suddenly stupid and heavy, and the right pupil became dilated and insensible to light, the left pupil remaining normal. He gradually got comatose, and died at 2 p.m. A *post mortem* examination was made twenty hours after death by Mr. Coen, the house surgeon. The dura mater was firmly attached to the upper part of the brain, the general surface of which was rather congested. On removing the brain a dark discoloration was perceived on the side of the right middle lobe, and on the back part of the cerebellum and on the medulla oblongata a large patch of recent meningitis with subarachnoid effusion. On opening the right ventricle it was found full of sero-purulent fluid, and on making a section of the right middle lobe a large abscess, full of offensive pus, was discovered, corresponding to the dark spot already mentioned. The

petrous portion of the temporal bone was extensively diseased; and the cause of the sudden coma on the day of death was, no doubt, the bursting of the cerebral abscess into the right ventricle.

Dr. MacSwiney said the pathological symptoms in the case were those of chronic purulent inflammation of the middle ear. He wished to ask what was the condition of the temporal bone and the bones of the ear on the side affected? Was the disease obviously extended from inflammation of the middle ear?

The President.—Was an examination made of the petrous bone?

Dr. Quinlan, in reply, said there was an opening into the petrous bone, from which matter was flowing. He probed it and found the bone quite diseased and disorganised, but he did not cut the bone out. There was the same smell from the pus that came out of the ear as from the pus that came out of the abscess.

The Section then adjourned.

MEDICAL SECTION.

President—James Little, M.D.; President of the King and Queen's College of Physicians.

Sectional Secretary—A. N. Montgomery, M.K.Q.C.P.

Friday, Dec. 17th, 1886.

The President in the Chair.

Addison's Disease.

Mr. Doyle read a paper on a supposed case of Addison's disease occurring in a dark-complexioned female somewhere between twenty-two and twenty-five years of age, having brownish and bronze-looking pigmentation of temples, cheeks, backs of hands, and front of legs. Constitutional symptoms preceded the pigmentation by nearly three months. Ill health first commenced with an unhealthy ulcerated condition of one of her fingers. This patient was said by her friends to have recovered, but that slight discoloration remained along the attachment of the hair to the temples. The chief interest connected with the case was to discover the primary disease that gave rise to weakness, lassitude, vomiting, cough, fever, and discoloration.

Select Clinical Reports.

Dr. A. W. Foot read a communication entitled "Notes of Some Unusual Cases observed in Hospital Practice." [It will be found in the Number of this Journal for January, page 51.]

Mr. Cox said he had himself a tendency to sea-sickness which lasted for some hours after he came on shore. He had had two cases of acute articular gout. One was that of a butler who was considerably improved under a treatment of colchicum and lithia, and subsequently iodide of potassium. The other was that of a policeman. Bromide of lithia gave him considerable relief, and the administration of salicylic acid seemed decidedly beneficial. Other patients he had seen relieved by ointment of belladonna and iodine, with powder of opium or the extract of opium. With reference to the curious case of delusion, he might state that at present he had under treatment a man who was sensitive of emitting a disagreeable smell, which might be the result of disease of the bones of the nose or of mischief at the back of the pharynx. It appeared that an impression once made on the sensorium remained even after all disease had passed away. Large doses of the extract of belladonna with the oxide of zinc were found useful.

Mr. Foy mentioned a case which came under his notice five years ago of a lady who was sea-sick on the passage from Holyhead to North-wall; and the sea-sickness continuing after her arrival, she died from sheer exhaustion.

Dr. Patton asked whether, in the case recorded by Dr. Foot, there was any sense of unpleasant smell to the man himself.

Mr. Molony said a case came under his observation of a young fellow, aged twenty, suffering under a fixed delusion that a bad smell was given off by his body. Under a course of tonics, sponge baths, and open-air exercise, he recovered. Among paralytics he had noticed hallucinations of smell.

The Registrar-General (Dr. Grimshaw) asked had Dr. Foot tested whether his patients had a proper sense of smell independent of their own delusion.

The President had seldom heard of a case in which the mistaken idea was so persistent as that of Dr. Foot's printer. He had himself been consulted three years ago by a gentleman on account of a bad smell which he said emanated from his body, and made him offensive to every one around him. He saw that the gentleman was under a delusion, and endeavoured to convince him of the fact, greatly to the patient's annoyance. Once afterwards he again saw this gentleman, who had, he believed, given up the idea. As to remedies against hallucination, and to support a broken-down nervous system, he would have more hopes from opium than from antiseptics or deodorants, which latter would be administered under the impression that the conviction was a true one. Even specialists seemed to have forgotten the great results published many years ago by Seymour of London as to the value of opium in cases of hallucination and melancholia.

Mr. Foot, in reply, said Mr. Cox's experience proved he came under

the description of "those who suffered most at sea," as published by a naval officer, of persons of light complexion and light hair. From none of the patients had he elicited a definite statement that they themselves perceived a bad smell. What they said was that they consumed the fresh air. No doubt there were some persons who seemed to use up the air in a room, and whose presence suggested the desire of having the window open. He had not specially tested the patient's sense of smell; indeed he did not take overmuch trouble in that respect, cases of hypochondriasis not being very attractive; and it was better to leave testing alone than apply an inefficient test, such as holding a smelling bottle, or a bottle of eau de Cologne to the nose and asking if the patient could smell that. He had met with cases, such as Mr. Molony alluded to, arising chiefly from fæcal retention. The President's remark on the morbid sensitiveness of the gentleman who consulted him was a striking feature, and was often an early symptom of insanity. Opium was of great advantage in those cases. It was in the same direction Dr. Osborne had recommended chloroform, thinking hypochondriasis was an affection of the solar plexus, whose stimulation would induce a more favourable view to be taken by the patient of things in general.

The Section adjourned.

NODOSITIES OF THE SECOND PHALANGEAL ARTICULATION AS A SIGN OF DILATATION OF THE STOMACH.

Bouchard, at the Lariboisière Hospital in Paris, has observed in about a fourth part of 400 cases of dilatation of the stomach, and more frequently in men than in women, a lateral projection on the internal, external, or dorsal aspect of the second phalangeal articulation, whereas the terminal phalanx is of normal dimensions—the reverse of the condition in phthisis. These so-called "Bouchard's Nodosities," as they are termed in France, where many of course agree with Bouchard, have—it is said—often enabled that observer to diagnosticate dilatation of the stomach, the existence of which he has afterwards been able to confirm by the usual physical signs.—*Ugeskrift for Læger*, *No.* 34, 1886, and *Norsk Magazin for Lægevidenskaben*, Januar 1887.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D. Univ. Dubl.; F.K.Q.C.P.;
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Vital Statistics

For four Weeks ending Saturday, January 1, 1887.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Dec. 11.	Dec. 18.	Dec. 25.	Jan. 1.		Dec. 11.	Dec. 18.	Dec. 25.	Jan. 1.
Armagh -	5·2	10·3	10·3	25·8	Limerick -	20·2	33·7	18·9	40·5
Belfast -	26·8	23·0	21·6	32·0	Lisburn -	19·3	4·8	9·7	9·7
Cork -	22·7	18·8	24·0	34·4	Londonderry	33·9	28·5	25·0	35·7
Drogheda	50·7	38·1	16·9	33·8	Lurgan -	25·7	20·5	35·9	10·3
Dublin -	35·0	28·9	27·8	36·3	Newry -	14·0	3·5	14·0	21·1
Dundalk -	30·6	26·2	30·6	13·1	Sligo -	14·4	19·2	9·6	19·2
Galway -	13·4	33·6	33·6	23·5	Waterford -	18·5	34·7	27·8	53·3
Kilkenny	29·6	8·5	0·0	25·4	Wexford -	12·8	29·9	21·4	42·8

In the week ending Saturday, December 11, the mortality in twenty-eight large English towns, including London (in which the rate was 21·9), was equal to an average annual death-rate of 22·9 per 1,000 persons living. In Glasgow the rate was 26·8; and in Edinburgh it was 17·0.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 28·8 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·2 per 1,000, the rates varying from 0·0 in ten of the districts to 14·3 in Londonderry—the 19 deaths from all causes registered in that district comprising 7 from measles and 1 from whooping-cough. Among the 114 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from simple continued fever, 3 from enteric fever, and 5 from diar-

rhœa; and the 35 deaths in Cork comprise 1 from scarlatina, 3 from enteric fever, and 2 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 178—97 boys and 81 girls—and the deaths to 241—118 males and 123 females.

The deaths represent an annual rate of mortality of 35·6 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 35·0 per 1,000.

Twenty-four deaths from zymotic diseases were registered, being equal to the number for the preceding week, but 2 under the average for the forty-ninth week of the last ten years; they comprise 8 from scarlet fever (scarlatina), 1 from typhus, 3 from whooping-cough, 3 from enteric fever, 7 from diarrhœa, &c.

Thirty-six cases of scarlatina were admitted to hospital during the week, being 1 under the admissions for the preceding week; 23 scarlatina patients were discharged, 2 died, and 154 remained under treatment on Saturday, being 11 over the number in hospital at the close of the preceding week.

Nine cases of enteric fever were admitted to hospital, being 4 over the admissions for the preceding week; 10 patients were discharged during the week, 1 died, and 33 remained under treatment on Saturday, being 2 under the number in hospital on Saturday, December 4.

There was but 1 case of typhus admitted; 3 typhus patients were discharged during the week, 1 died, and 12 cases remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Fifty deaths from diseases of the respiratory system were registered, being 19 over the number for the preceding week, but 5 under the average for the forty-ninth week of the last ten years; they comprise 33 from bronchitis and 9 from pneumonia or inflammation of the lungs.

In the week ending Saturday, December 18, the mortality in twenty-eight large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 20·7 per 1,000 persons living. In Glasgow the rate was 26·9; and in Edinburgh it was 18·2.

The average annual death-rate in the sixteen principal town districts of Ireland was 25·6 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·6 per 1,000, the rates varying from 0·0 in nine of the districts to 8·9 in Londonderry—the 16 deaths from all causes registered in that district comprising 5 more from measles. The 98 deaths from all causes registered in Belfast comprise 4 from

scarlatina, 1 from typhus, 2 from diphtheria, and 3 from enteric fever. Among the 29 deaths in Cork are 3 from enteric fever and 1 from diarrhœa. The 9 deaths in Drogheda comprise 1 from scarlatina; and the 4 deaths in Sligo comprise 1 from typhus.

In the Dublin Registration District the births registered during the week amounted to 207—103 boys and 104 girls—and the deaths to 200—108 males and 92 females.

The deaths represent an annual rate of mortality of 29·5 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 28·9 per 1,000.

Twenty-three deaths from zymotic diseases were registered, being 6 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended December 11; they comprise 1 from measles, 5 from scarlet fever (scarlatina), 1 from typhus, 2 from whooping-cough, 8 from enteric fever, 5 from diarrhœa, &c.

Seventeen cases of scarlatina were admitted to hospital during the week, being 19 under the admissions for the preceding week; 24 patients were discharged, 3 died, and 144 remained under treatment on Saturday, being 10 under the number in hospital at the close of the preceding week.

Eight cases of enteric fever were admitted to hospital, being 1 under the admissions for the week ended December 11; 3 patients were discharged, and 38 remained under treatment on Saturday, being 5 over the number in hospital at the close of the preceding week.

Eight cases of typhus were admitted, against 1 admission in the preceding week; 7 patients were discharged during the week, 1 died, and 12 remained under treatment on Saturday, being equal to the number in hospital on Saturday, December 11.

Forty-nine deaths from diseases of the respiratory system were registered, being 1 under the number for the preceding week, and 9 under the average for the fiftieth week of the last ten years; they comprise 33 from bronchitis, 7 from pneumonia or inflammation of the lungs, and 5 from croup.

In the week ending Saturday, December 25, the mortality in twenty-eight large English towns, including London (in which the rate was 19·7), was equal to an average annual death-rate of 21·5 per 1,000 persons living. In Glasgow the rate was 32·2; and in Edinburgh it was 23·5.

The average annual death-rate represented by the deaths registered last week in the sixteen principal town districts of Ireland was 24·1 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·3 per 1,000, the rates varying from

0·0 in nine of the districts to 8·9 in Londonderry—the 14 deaths from all causes tabulated for that district comprising 5 more from measles. Among the 92 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from diphtheria, 2 from simple continued and ill-defined fever, 1 from enteric fever, and 4 from diarrhœa; and the 37 deaths in Cork comprise 1 from typhus and 2 from enteric fever.

In the Dublin Registration District the births registered during the week amounted to 134—64 boys and 70 girls—and the deaths to 193—104 males and 89 females.

The deaths represent an annual rate of mortality of 28·5 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·8 per 1,000.

Twenty-two deaths from zymotic diseases were registered, being 8 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended December 18; they comprise 6 from scarlet fever (scarlatina), 1 from typhus, 6 from whooping-cough, 1 from diphtheria, 1 from ill-defined fever, 3 from enteric fever, 3 from diarrhœa, &c.

Fifteen cases of scarlatina were admitted to hospital during the week, being 2 under the admissions for the preceding week; 27 scarlatina patients were discharged, 4 died, and 128 remained under treatment on Saturday, being 16 under the number in hospital on Saturday, December 18.

Five cases of enteric fever were admitted to hospital, being 3 under the admissions for the preceding week; 5 patients were discharged, and 38 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

During the week ended December 18, 8 cases of typhus were admitted. In the week under discussion there were no admissions of cases of this disease, and 3 patients were discharged, leaving but 9 cases under treatment in hospital on Saturday, December 25.

Thirty-eight deaths from diseases of the respiratory system were registered, being 21 below the average for the corresponding week of the last ten years, and 11 under the number for the preceding week; they comprise 30 from bronchitis, and 2 from pneumonia or inflammation of the lungs.

In the week ending Saturday, January 1, 1887, the mortality in twenty-eight large English towns, including London (in which the rate was 23·9), was equal to an average annual death-rate of 25·1 per 1,000 persons living. In Glasgow the rate was 32·9; and in Edinburgh it was 22·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 33·8 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·8 per 1,000, the rates varying from 0·0 in nine of the districts to 19·6 in Londonderry—the 20 deaths from all causes registered in that district comprising 10 more from measles and 1 from diarrhœa. Among the 136 deaths from all causes registered in Belfast are 4 from scarlatina, 1 from whooping-cough, 2 from simple continued fever, 2 from enteric fever, and 3 from diarrhœa; and the 53 deaths in Cork comprise 2 from enteric fever and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 210—111 boys and 99 girls—and the deaths to 257—117 males and 140 females.

The deaths represent an annual rate of mortality of 38·0 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 36·3 per 1,000.

Twenty-three deaths from zymotic diseases were registered, being 1 over the number for the preceding week, but 9 below the average for the fifty-second week of the ten years, 1876–85; they comprise 11 from scarlet fever (scarlatina), 1 from cerebro-spinal fever, 4 from enteric fever, 2 from diarrhœa, 2 from erysipelas, &c.

Twenty-eight cases of scarlatina were admitted to hospital during the week, being 13 in excess of the admissions for the preceding week; 17 scarlatina patients were discharged, 3 died, and 136 remained under treatment on Saturday, January 1, being 8 over the number in hospital at the close of the preceding week.

Ten cases of enteric fever were admitted to hospital, against 5 admissions in the preceding week; 7 patients were discharged, 3 died, and 38 remained under treatment on Saturday, being equal to the number in hospital on Saturday, 25th December.

Four cases of typhus were admitted, and 3 typhus patients were discharged during the week; while 10 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

Fifty-three deaths from diseases of the respiratory system (including 35 from bronchitis and 9 from pneumonia or inflammation of the lungs) were registered, being 15 over the number for the preceding week, but 7 under the average for the fifty-second week of the ten years, 1876-85.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N. Long.* 6° 15′ *W., for the Month of December*, 1886.

Mean Height of Barometer, - - -	29·682 inches.
Maximal Height of Barometer (at 9 a.m. of 31st),	30·501 ,,
Minimal Height of Barometer (at 2 30 p.m. of 8th),	27·758 ,,
Mean Dry-bulb Temperature, - - -	37·2°.
Mean Wet-bulb Temperature, - - -	35·8°.
Mean Dew-point Temperature, - - -	33·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·197 inch.
Mean Humidity, - - - - -	87·6 per cent.
Highest Temperature in Shade (on 6th), - -	53·2°.
Lowest Temperature in Shade (on 21st), - -	22·0°.
Lowest Temperature on Grass (Radiation) (on 21st),	16·8°.
Mean Amount of Cloud, - - - -	53·3 per cent.
Rainfall (on 21 days), - - - -	3·348 inches.
Greatest Daily Rainfall (on 14th), - -	·734 inch.
General Directions of Wind, - - -	W., W.N.W.

Remarks.

This was a cold month, the weather being especially unsettled and changeable. The most remarkable feature in the meteorology of the month was the phenomenal atmospherical depression which passed across the North of Ireland, and afterwards the North of England, on Wednesday, the 8th. Near the centre of this system the barometer fell below 27·50 inches—a reduction of pressure almost as great as that which occurred on the 26th of January, 1884, when the reading 27·334 inches was recorded at Ochtertyre, near Crieff, in Perthshire. The coldness of the month may be estimated from the fact that the thermometer fell to or below 32° in the screen on twelve nights, and on the grass on no fewer than twenty-nine nights.

In Dublin the mean temperature (37·9°) was 3·4° below the average (41·3°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 37·2°. In the twenty-one years ending with 1885, December was coldest in 1878 (M. T. = 32·8°) and warmest in 1865 (M. T. = 46·2°). In 1874, the M. T. was 36·8°, and in 1870 it was 37·3°. In 1885, the M. T. was 42·0°; in the year 1879 (the cold year) it was 37·9°, or exactly the same as in the present year.

The mean height of the barometer was 29·682 inches, or 0·200 inch below the average value for December—namely, 29·882 inches. The mercury rose to 30·501 inches at 9 a.m. of the 31st, and fell to 27·758 inches at 2 30 p.m. of the 8th. The observed range of atmospherical pressure was, therefore, as much as 2·743 inches—that is, nearly two

inches and three-quarters. Atmospherical pressure had not been as low in Dublin as it was on the 8th for more than fifty years, at all events. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 37·2°, or 8·7° below the value for November, 1886; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 37·0°, or precisely 3·5° below the average mean temperature for December, calculated in the same way, in the twenty years, 1865–84, inclusive (40·5°). The arithmetical mean of the maximal and minimal readings was 37·9°, compared with a twenty years' average of 41·3°. On the 6th the thermometer in the screen rose to 53·2°—wind W. by S.; on the 21st the temperature fell to 22·0°—wind W.N.W. The minimum on the grass was 16·8° on the same date. The rainfall was 3·348 inches, distributed over as many as 21 days. The average rainfall for December in the twenty years, 1865–84, inclusive, was 2·516 inches, and the average number of rainy days was 17·0. The rainfall and the rainy days, therefore, were both considerably above the average. In 1876 the rainfall in December was very large—7·566 inches on 22 days; in 1872 4·932 inches fell on as many as 24 days; and in 1868 (which was otherwise a fine and dry year), 4·749 inches fell on as many as 27 days. On the other hand, in 1867, only ·771 of an inch was measured on 13 days; and in 1871, the December rainfall was only ·797 of an inch on 15 days. But in 1885, only ·742 of an inch of rain was measured on but 10 days.

Solar halos were seen on the 2nd, 13th, and 25th, and lunar halos on the 2nd, 7th, and 10th. The atmosphere was foggy on the 3rd, 14th, 15th, 16th, 20th, 21st, 29th, 30th, and 31st. High winds were noted on 16 days, gales prevailing on 4 days. Hail fell on the 8th, 16th, and 20th, and snow or sleet on the 1st, 8th, 14th, 16th, 18th, 19th, and 28th.

At the beginning of the month, N.W. winds and cold weather prevailed in the rear of an atmospherical depression which lay over the south of Scandinavia. On the night of Friday, the 3rd, a V-shaped depression passed eastwards across Ireland, causing rain and sudden changes of temperature. Then came two days of high temperature, and strong westerly winds, and dull damp weather. Tuesday, the 7th, was much colder and clearer, but, towards night, the barometer fell fast and the wind backed to S. and S.S.E., as one of the deepest depressions of modern times approached Ireland from the Atlantic.

On Wednesday, December 8, the centre of one of the deepest and most extensive atmospherical depressions observed during the present century, passed across the north of Ireland in an easterly direction. At 8 a.m. the centre was apparently close to Belmullet, County Mayo, where the barometer then stood at 27·58 inches, or as much as 1·85 inches below the

reading recorded at that station only 24 hours previously. From Mayo the system travelled eastwards across Ulster, reaching the south of Scotland and north-west of England at 6 p.m., when the barometer read only 27·41 inches at Barrow-in-Furness.

In Dublin the minimal pressure was recorded at 2 30 p.m., and was 27·758 inches. At the Ordnance Survey Office, Phœnix Park, the minimum was 27·766 inches, being the lowest reading on record at that station since 1829. At Armagh Observatory the minimum was reached at 1 p.m. and was 27·446 inches (27·214 inches at an elevation of 208 feet above mean sea level and approximate air temperature 48·0°).

During the remarkable depression of Saturday, January 26th, 1884, when the barometer receded to 27·332 inches at Ochtertyre, near Crieff, in Perthshire, the lowest pressure in Dublin was 28·150 inches. In the hurricane of January 6 and 7, 1839, the reading was not even so low—viz., 28·290 inches at the Ordnance Survey Office, Phœnix Park. At that station, however, six weeks previously, on November 28, 1838, the barometer had fallen to 27·769 inches at 8 p.m. But even this phenomenal value was ·011 inch in excess of that registered in the City of Dublin on last Wednesday—27·758 inches, a reading no less than 3·018 inches below that recorded a fortnight previously, namely, 30·776 inches at 9 p.m. of Wednesday, November 24, 1886. On February 5, 1870, the reading of 27·330 inches was recorded on the Cunard steamer *Tarifa*, in the Atlantic, in lat. 51° N. and long. 24° W.

The gales attending the depression of December 8 were very fierce from S.W. to N.W. on the English coasts, and so were the easterly gales in the North of Scotland, but in and about Dublin no violent storm occurred during the passage of the cyclone.

The weather of the week ending Saturday, the 18th, was very unsettled. Rain or sleet fell frequently over England, and showers of snow were reported from Scotland nearly every day. On Tuesday and Wednesday, the 14th and 15th, an area of low pressure advanced over the southern portion of Ireland and the greater part of England. It caused strong easterly winds and heavy downpours of cold rain, sleet, and snow. On the morning of the 16th also, snow, sleet, and hail fell heavily, though but locally, in Dublin. After this, a severe frost set in, culminating on the 21st in Ireland and on the 22nd in England. On the former day a depression appeared off the N.W. of Ireland, whence it travelled eastwards to Scotland, producing a thaw and heavy rain, with thunderstorms in some places. Temperature now became very unsteady, the changes as the S.W. current of wind alternated with the N.W. or N. current being sudden and at times considerable. Christmas Day proved fair and bright, with a light frost.

On Sunday, the 26th, a deep depression appeared at the entrance to the English Channel, along which it travelled towards E.N.E. with

great rapidity. In Dublin the day was dull and cold, and frost set in towards night, but no precipitation occurred. In England, however, violent gales prevailed, and a downpour of rain was followed by a snow-storm of unexampled severity. At Southampton, in 19 hours, the precipitation amounted to 2·88 inches of rain water, at Plymouth 1·8 inches of rain fell in 6 hours during a N.E. gale, and in London nearly 2 inches of rain were measured. The wet snow clinging to telegraph wires and trees caused great damage. On the 29th an anticyclone came in over Ireland from the westward, and as it advanced dense fogs and sharp frost set in—particularly in England, where temperature fell below 20° ere the year closed.

Rainfall in 1886,

At 40 Fitzwilliam-square, West, Dublin

Month	Total Depth	Greatest Fall in 24 Hours		Number of Days on which ·01 or more fell
	Inches	Depth	Date	
January, - - -	3·244	·901	25th	26
February, - - -	1·981	·522	28th	15
March, - - -	2·065	·462	26th	19
April, - - -	1·524	·374	4th	15
May, - - -	5·472	1·266	12th	21
June, - - -	1·293	·540	2nd	15
July, - - -	1·722	·340	17th	18
August, - - -	1·503	·366	21st	13
September, - - -	2·471	·649	9th	15
October, - - -	6·163	1·560	15th	24
November, - - -	2·180	·452	5th	18
December, - - -	3·348	·734	14th	21
Total, - -	32·966	—	—	220

The rainfall was considerably in excess of the average annual measurement of the twenty years, 1865–84, inclusive—viz., 28·015 inches. It will be remembered that the rainfall in 1884 was very exceptionally small—20·467 inches, the only approach to this measurement in Dublin being in 1870, when only 20·859 inches fell. In six of the twenty years in question the rainfall was less than 26 inches, and in 1885 it was 26·614 inches. Only twice since these records commenced has the rainfall in Dublin exceeded that of 1886—namely, in 1872, when 35·566 inches fell on 238 days, and in 1880, when 34·512 inches were measured on, however, only 188 days. The precipitation was nearly as great as in

the past year in 1876, when 32·663 inches fell on 195 days, and in 1877, when 32·146 inches fell on 229 days.

In 1886 there were 220 rainy days, or days upon which not less than ·01 inch of rain (one-hundredth of an inch) was measured. This was largely in excess of the average number of rainy days, which was 194·6 in the twenty years, 1865–84, inclusive. Included in the rainy days are 40 on which snow or sleet fell, and 41 on which there was hail. In January hail was observed on 14 days and in March on 8 days. Snow or sleet fell on 18 days in January and on 9 days in March. Thunder and lightning occurred on only three occasions during the year—twice in September and once in November.

The rainfall was distributed as follows:—7·290 inches fell on 60 days in the first quarter, 8·289 inches on 51 days in the second, 5·696 inches on 46 days in the third, and 11·691 on 63 days in the fourth and last quarter. The preponderance of the fall in the fourth quarter is more than accounted for by a downpour, amounting to 6·163 inches, which occurred on 24 days in October. More than an inch of rain (upwards of 105 tons of water per statute acre) fell on the 11th of May (1·151 inches), the 12th of May (1·266 inches), and the 15th of October (1·560 inches).

J. W. Moore, M.D., B.A., Univ. Dubl.; F. R. Met. Soc.

PERISCOPE.

PARALYTIC ATAXIA OF THE HEART.

For the third time in the last ten years Professor Semmola has called to the attention of the profession a peculiar disorder of the heart, of purely nervous origin, which he calls "paralytic ataxia of the heart, of bulbar origin." In a recent communication to the Paris Académie des Sciences he brings, as he believes, new evidence of the existence of this disease. Paralytic ataxia of the heart is a disease which usually affects men between the ages of forty-five and sixty. It is caused, as a rule, by powerful emotions and venereal excesses. The disease begins with gastric disturbances—an obstinate dyspepsia, followed by gastric catarrh. Then the cardiac symptoms appear, and consist at first simply of systolic weakness and increase of the heart-beat. This constitutes the prodromal stage of the malady, and it may last for one, two, or three years. The patient while in this stage may recover; but if the causes continue, the disease progresses and new symptoms appear. These consist of attacks of palpitation, irregular heart-beat, and respiratory troubles. The patient during an attack develops a marbled discoloration of the hands, forearms, and legs, especially at the finger-joints and about the knees. This symptom

is characteristic and differential, and it is due, says Semmola, not to any mechanical disturbance of the circulation, but to a vaso-motor paralysis, and it shows that the vaso-motor centre as well as the cardiac centre in the medulla is affected. The heart shows no enlargement and no evidence of a valvular lesion. The patient suffers from shortness of breath on slight exertion, and auscultation of the lungs reveals crepitant râles at the base. These Semmola believes are also due to vaso-motor paralysis, and not to mechanical obstruction. Against this view, however, it may be said that it is doubtful whether the pulmonary blood-vessels are influenced by vaso-constrictor nerves. The patient also suffers from attacks of suffocation, which arouse him from sleep and force him to sit up in bed, when the symptoms soon disappear. After a time œdema of the feet begins to develop, and this marks the terminal period of the malady. At this time a slight cardiac bruit is heard; but Semmola believes that this does not indicate a valvular lesion, since it disappears with the improvement of other symptoms. It is stated that *post-mortem* examination of these cases shows a distinct degeneration of the cardiac ganglia, and also of those parts of the medulla in connection with the vagus nuclei. The disease is a progressive degeneration, therefore, of the cardiac nervous apparatus. Our readers will see that the paralytic ataxia of Semmola may easily be confounded with simply irritable heart, or angina pectoris, or with a fatty heart. We regret that we have been unable to find Semmola's reports of illustrative cases or records of autopsies. A good many of these are required to give to the disease the distinct clinical and anatomical entity which is claimed for it.—*N. Y. Med. Record*, Nov. 20, 1886.

COTO BARK AND COTOIN IN DIARRHŒA.

In a note read before the Société de Thérapeutique, Paris, Dr. H. Huchard reported his experience in the use of cotoin in diarrhœa. Coto bark was introduced into Europe in 1873 from Bolivia, where it had been employed in gout and rheumatism, but especially in the treatment of diarrhœa. Jobst, of Stuttgart, in 1875, succeeded in isolating the active principle *cotoin*, and from an allied species he obtained a similar one, to which he applied the name of *paracotoin*. Cotoin crystallises in yellow four-sided needles, resembling commercial gallic acid. It melts at 130°, is soluble in warm water, chloroform, ether, alcohol, and sulphide of carbon, and slightly soluble in cold water, petroleum, and benzine. It is likewise dissolved by alkalies, yielding a yellow colour; with sulphuric acid it is yellowish brown, and with concentrated nitric acid it strikes a blood-red colour. This reaction enables it to be recognised in the urine in from seven to ten hours after its administration. Paracotoin is less active than cotoin, is scarcely soluble in water, and does not give the colour-reaction with nitric acid. Coto bark also contains, according to Jobst and Hesse, other principles—

oryleucotoin, *leucotoin*, and *hydrocotoin*, the therapeutic effects of which are less marked than those of cotoin. The physiological action of cotoin has been studied by Pibram, Benkart, and Albertoni. It has antiseptic and antiputrefactive properties; it stimulates appetite and gastric digestion, and does not cause constipation. It was given in relatively large (1·50 gramme) doses to rabbits and guinea-pigs without producing marked toxic effects. The most decided property of cotoin is the dilatation of the vessels of the intestinal walls (Albertoni) following its administration, and the consequent improvement in nutrition of the mucous membrane. Therapeutically, cotoin has been found valuable in diárrhœas of all kinds. Even in typhoid fever and in cholera it has been employed with some success. Huchard has administered it hypodermically, as recommended by Bourneville and Bricon, but with unsatisfactory result. He prefers the powders by the mouth, containing twenty centigrammes, of which two or three should be given daily. The results obtained in twenty-one cases were as follow:—In ten cases of diarrhœa with tuberculosis (three of which had intestinal ulceration), in eight of catarrhal diarrhœa, and in three of arthritic diarrhœa of four months' standing, the cotoin was given as directed, and with success in all except two cases of tuberculosis. Fronmüller, out of ninety-three cases of diarrhœa following typhoid fever, noted only nine cases of failure. Parsons, Burney Yeo, and Rohrer have also used it with remarkable success in infantile diarrhœas. These results are sufficient to assure cotoin a high position in therapeutics.—*Bulletin Générale de Thérapeutique*, August 30, and *Phil. Med. Times*, Nov. 13, 1886.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Strophanthus.

Messrs. Burroughs, Wellcome, & Co., with commendable enterprise, have taken up the drug Strophanthus, introduced recently to the profession by Dr. Thos. R. Fraser, of Edinburgh. Through the courtesy of the firm we have been favoured with a specimen of the seeds of the plant and a sample of the tincture prepared from them. The seeds are about $\frac{1}{2}$ inch in length, narrow, pointed at each end, and closely covered with fine silky hairs. Their taste is extremely bitter. From the seeds Dr. Fraser has separated a crystalline glucoside, *strophanthin*, of very active properties. Dose, for hypodermic use, $\frac{1}{120}$–$\frac{1}{60}$ grain.

The drug belongs to the digitalis group of remedies, acts powerfully upon the heart, increases its systole, and slows its contractions. Dr. Fraser has administered the drug with signal success in several cardiac cases, and Dr. Porteous confirms its valuable effects in controlling the heart's action. Dose of the tincture, 2–4 minims to begin with.

It may interest our readers to know that from the seeds of this apocynaceous plant the Kombé arrow poison, which is used in various parts of Africa, is prepared. The qualifying affix, "hispidus" (*i.e.*, rough, shaggy, hairy), has reference to the silky hairs with which the seeds are covered.

Messrs. Burroughs, Wellcome, & Co., have generously expressed their readiness to present, to any hospital, the medical staff of which desires to make a trial of this remedy, a few bottles of the tincture for the purpose.

Geddes' Fluid Extract of Hemlock Bark.

The Geddes Manufacturing Company, of Cambridgeport, Boston, Massachusetts, U.S.A., have favoured us with samples of their Fluid Extract of Hemlock Bark, prepared from the *Abies Canadensis*, or common Canadian hemlock tree. This must not be confounded with the shrub or poisonous hemlock (*Conium Maculatum*). The hemlock tree abounds only throughout the Dominion of Canada and the Northern States of America. The tree itself is from 50 to 100 feet in height, and from 6 to 10 feet in girth at its base. Only the *inner* bark from the upland growth of this tree is used in the manufacture of Geddes' Extract of Hemlock Bark. The process employed is that of repeated evaporation, wherein the most elaborate machinery, constructed upon the highest principles of modern science and mechanical skill, is employed. The extract is reduced by evaporation to the consistency of thick syrup of a dark claret colour. It is freely miscible with water, contains no alcohol, does not ferment, and is guaranteed to keep for years in any climate. From the clinical experiences of the preparation already recorded, the fluid extract of hemlock bark would appear to be a valuable astringent, particularly in cases of leucorrhœa and of hæmorrhoids. It has also been successfully employed in epistaxis, hæmorrhage from the bowels, dysentery, and surface-bleeding from cuts and wounds of all kinds. It may also be used as a gargle, diluted with eight parts of cold water, in tonsillitis and aphthous stomatitis. Full directions for use are furnished with each half-pound bottle of the extract, which may be obtained from the Company at College Chambers, 249 High Holborn, London, W.C., at a cost of 4s. 9d. per bottle.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XII.—*Conservative Surgery in Diseases of the Foot and Ankle-joint.*[a] By W. I. WHEELER, F.R.C.S.I.; M.D. and Master of Surgery, Dublin University; M.K.Q.C.P.I.; Member of Council, R.C.S., and of the Surgical Section of the Academy of Medicine; Past President, R.C.S.; Surgeon and Lecturer on Clinical and Operative Surgery, City of Dublin Hospital; Consulting Surgeon to the National Lying-in Hospital.

I. EXCISION OF OS CALCIS (FEMALE).
II. EXCISION OF OS CALCIS (MALE).
III. EXCISION OF OS CALCIS (MALE).
IV. EXCISION OF ASTRAGALUS.
V. MEDIO-TARSAL OPERATION.
VI. EXCISION OF OS CALCIS, ASTRAGALUS, AND MALLEOLI.
VII. REFERENCE TO REMOVAL OF CUBOID, SCAPHOID, CUNEIFORM, METATARSAL, BONES; AND RESECTION OF FIRST PHALANGO-METATARSAL ARTICULATION.

BEFORE entering into the essential details of the conservative surgery of the foot, it will not be out of place to refer briefly to some of the anatomical points more especially bearing on the subject. Putting aside the freely movable joints of the toes, there are three joints in connection with the tarsus that are capable of free movement in a direction of flexion and extension. The first

[a] Read before the Surgical Section of the Academy of Medicine in Ireland, Friday, December 10, 1886. [For the Discussion on this paper see page 292.]

is the ankle proper, between the tibia, fibula, and the astragalus; the second is the transverse tarsal joint, between the os calcis and cuboid and the globular head of the astragalus and the scaphoid; the third and last joint being that between the tarsus and the metatarsus. The other articulations of the tarsus permit of extremely limited motion (only), and their actions subserve the purpose of elasticity of the tarsus as a whole rather than actual movement. The joint that is most intimately connected with the intrinsic movements of the foot is the astragalo-scaphoid, consisting, as it does, of an almost enarthrodeal articulation, partly composed of an extremely elastic ligament (the inferior calcaneo-scaphoid), which allows of considerable increase of mobility on account of its elasticity. The surface of the astragalus is much larger than the scaphoid, but its free movement on the latter is allowed by the ligament just mentioned.

In connection with these joints the synovial membranes become important. The largest and most complex is that which lines the anterior surface of the scaphoid, passing forward in three processes—one between the cuboid and external cuneiform, one between the middle and internal cuneiform, and the third (by far the most important) passes forward, lining the contiguous surfaces of the middle and external cuneiform bones, and then passes between the anterior surfaces of the external and middle cuneiforms and the proximal surfaces of the second and third metatarsal bones, and also passes between the surfaces of the second, third, and fourth metatarsals. This synovial sac varies but seldom, sometimes allowing the prolongation between the internal and middle cuneiforms to join the expansion between the second metatarsal and anterior surface of the middle cuneiform, and thus the middle cuneiform may be surrounded with a complete synovial membrane. By means of this sac the following bones are in communication by their synovial membrane:—Second, third, and fourth metatarsals, the three cuneiforms, the cuboid and scaphoid—in fact, all the tarsus anterior to the transverse tarsal articulation. The other synovial membranes are not of such importance—(1) between the internal cuneiform and first metatarsal, (2) cuboid and third and fourth metatarsals, (3) calcis and cuboid, (4) posterior surface of astragalus and calcis—except one, that which lines the concave surface of the scaphoid, the convex head of the astragalus, the anterior articular surface of the scaphoid, and the calcaneo-scaphoid ligament. On account of the close bond between the bones of the

tarsus by means of ligaments, the synovial sacs become related to a much greater extent of ligamentous structures than is the case in other articulations.

With reference to the arches of the tarsus, the antero-posterior arch is maintained not alone by the fascia muscles and ligaments that run in an antero-posterior direction, but also by the strong tendon of the tibialis anticus which is inserted into the keystone of the arch (the internal cuneiform bone); and the preservation of this arch is necessary for the existence of the transverse half arch which completes the tripod of which the internal cuneiform is the apex. In this connection may also be mentioned the tendon of the peroneus longus, which, by its insertion into the base of the first metatarsal bone, forms the opposing point to the half arch of the tarsus.

To epitomise what I have written—the tarsus, for practical purposes, may be divided into four separate or distinct synovial sacs, no one of them communicating with the other.

In nearly all the cases of disease of the foot that have come under my notice, the osseous structures were primarily affected, and not the articulations; and on considering the arrangement of the synovial membranes, as above described, it will be readily understood that the original starting-point of disease will greatly influence its extent; thus, disease in the calcis extending to the cuboid will for a lengthened period be limited to these bones; but should disease commence in the middle cuneiform or in the bases of the second or third metatarsal bones, the rapidity of its progress will soon implicate the centre of the inner and front part of the tarsus.

Having thus briefly reviewed the anatomy of the parts, the first consideration that presents is the comparatively recent date that marks any attempt to advance the conservative surgery of the foot to the same level as that of its analogue in the upper limb—the hand. In a point of surgical interest, the foot is in no way of less importance. Its intrinsic movements, no doubt, are less; but, excluding the proper movements of the thumb, those of the foot are not inferior. Anatomically it is composed of just as complicated a series of structures; its powers of repair are not unequal to those of the hand; but, until recent years, the surgeon who would preserve the smallest portion of the hand with scrupulous care, would condemn the entire foot to amputation without sufficient hesitation. At no very distant date no distinction was made between the diseased portions of the foot, and those who suffered

from diseased tarsus were indiscriminately condemned to amputation of the leg—the wealthy and affluent who could afford suitable artificial limbs, above the ankle-joint; to the poorer classes, just below the knee; and thus not only was a limb perfectly sound removed, but the risk to the patient materially increased. And thus this practice prevailed until Chopart drew decided attention to the propriety of treating limited disease of the tarsus by operation other than amputation of the leg, when he introduced the medio-tarsal operation, or that called by his name. Then came Symes' operation, another advance in conservative surgery; and, without doubt, the introduction and use of ansæsthetics also assisted. But it is not my intention to enter into any detail or to discuss the modifications and relative merits of these many excellent operations devised for removing only the diseased structures of the foot—such as Lisfranc's, Hey's, Pirogoff's, the subastragaloid, Chopart's, and others too numerous to be mentioned, but to shortly relate some of the more interesting cases of disease that have occurred in my own practice, the operations necessary for the removal, and the results.

I. *Complete Excision of the Os Calcis for Carious Disease.*

Case I.—A. T., a young lady, aged nineteen years, above the middle height, of healthy appearance, suffered from carious disease of her left os calcis, which was said to have been excited by a fall when skating. Two years subsequently, when I saw her, an abscess had formed on the posterior and external surface of the os calcis, which had burst. On passing a probe into the small aperture which existed, the bone could easily be felt denuded and roughened to the extent of about the size of a shilling. An incision was made in the site of the opening, and potassa c. calce applied, commonly called Kirkpatrick's treatment, but more correctly it should be accredited to Munroe *primus*. This line of treatment had not a beneficial effect. The disease extended, and I was obliged to excise the entire bone, which was done by making a semilunar incision, carried a little anterior to the calcaneo-cuboid articulation to a point corresponding on the opposite side. I dissected the flap forwards, and opened the calcaneo-cuboid articulation, divided the ligaments, and removed the bone. Dr. H. Benson administered the anæsthetic; my pupil, Mr. Corry, assisted me. Free drainage was established, and the foot placed on a splint. The operation was performed in 1875; in three years after the young lady walked almost perfectly. The heel of the boot on her right foot was made as low as possible, that on the left added to sufficiently to compensate for the deficiency.

II. *Removal of the Right Os Calcis for Carious Disease.*

Case II.—G. A., a sailor residing in Dalkey, was admitted into the City of Dublin Hospital, under my care, on the recommendation of my friend and colleague, the late Mr. Tufnell, in 1877. There was not any history of injury. He stated that a sudden pain came in his heel, which he attributed to cold and wet when fishing; and this was followed by abscess, forming a sinus which led down to roughened bone on the inferior surface near the centre. The sinus was enlarged, and sulphuric acid injections resorted to; afterwards iodine. The treatment did not control the disease; the bone softened, and became carious to a greater extent. I decided to excise it, which I did after the manner before described. The under-surface of the astragalus was roughened at the inferior posterior surface, which I removed, taking off a thin section of bone by means of a fine saw. The patient made an excellent recovery, and may be seen at Dalkey following his accustomed avocations.

III. *Excision of the Os Calcis for disease which attacked the inferior and external surface, the articular surfaces being healthy.*

Case III.—R. T., a young gentleman, aged twenty-one years, born of healthy parents, about five feet eight inches in height, of sallow complexion, for whom I was consulted, in October, 1880, for pain over the external portion of his right os calcis, on which surface was a small opening which occasionally closed and then again burst, discharging a thin fluid. He was seen by Mr. Butcher, who advised injections and subsequently removal of the diseased bone by the gouge. A month after I first saw him—that is, about the 20th November, 1880—he was placed under an anæsthetic by Dr. Harley. Mr. Butcher and Mr. Tufnell were present. It was now ascertained that the disease was so extensive that excision of the bone should be practised, which I did by the subperiosteal method. The external incision, which was curved, commenced on the outside of the tendo-Achillis, at the level of the ankle-joint, and was carried down to the tuberosity on the external surface of the os calcis, and as far forwards as the base of the fifth metatarsal bone. The flap having been raised, I separated the periosteum carefully. This operation was long and tedious. The periosteum did not strip off easily from the bone, as we are wont to observe in disease. Small particles of bone remained adherent to the periosteum. The drainage was not as satisfactory as in the other cases. The progress of the case was slow, and portions of bone were thrown off during the treatment, to cure which was eventually accomplished in three months after the operation. In two years after the operation (1882) the patient walked well. I could not satisfy myself that there was any reproduction of the bone.

If called on again to excise the os calcis, I would not adopt the subperiosteal method. I do not believe in the advantages claimed for it, and to my mind it has many disadvantages; besides, the periosteum is often diseased, and does not, after operations, always carry out its wonted functions. [The excised bones were exhibited at the Pathological and Surgical Societies.]

IV. *Complete Excision of the Right Astragalus for Disease.*

Case IV.—In March, 1881, I was consulted by the parents of a healthy young lady, nineteen years of age, for caries of her right astragalus. The exciting cause of the disease appears to have been a blow over the bone a year previous, which occurred when running upstairs, when she slipped and fell forwards, the edge of the stair step causing a severe contusion over the front of her ankle-joint. This accident confined her to bed for a week, after which period she resumed her active country life. She continually felt stiffness and aching pain in the neighbourhood of her ankle-joint, especially after exercise. Two months before I saw her—that is, early in January, 1881—without any known immediate cause, an abscess formed in the front of her ankle, which rapidly ran its course, and burst in about a week after the first acute symptoms, leaving two sinuses. On entering a probe into the most anterior, that part of the astragalus just behind the head could be felt exposed, and on passing a probe into the sinus situated anteriorly and externally, the denuded bone was easily reached. Having examined this patient on two occasions, I advised the removal of the astragalus. The lady was anæsthetised by Dr. Harley, Mr. Butcher was present, and Mr. Kelly (now Dr. Kelly), my former pupil, assisted. I made a somewhat curved incision from the external malleolus, and extended it to the outer border of the foot, passing through the sinuses. I divided portion of the external lateral ligament of the ankle-joint, the peroneus brevis tertius and short extensor of the foot. The extensor tendons in front and the dorsalis pedis vessel were not injured. The peroneus longus muscle was retracted posteriorly. I next turned the foot forcibly inwards, and divided the ligamentous attachments, and then seizing the bone with a lion forceps I drew it forwards, and further divided any structures necessary, being careful not to injure the plantar arteries on the inner side. There was not any hæmorrhage of consequence. A few muscular branches were ligatured; the cavity, which I had previously examined, I washed out with a solution of chloride of zinc, 15 grains to the ounce in strength; free drainage was established; and the foot and limb was placed on a splint, such as is commonly used in excision of the ankle-joint. The wound progressed kindly, and in a little less than three weeks had completely healed. Before the end of the fifth week I applied a plaster

bandage, which remained on for six weeks, which allowed of some slight motion. Suffice it to say that the result is all that could be desired—the limb but little shortened, her powers of locomotion scarcely impaired, and a movable articulation exists between the os calcis and malleoli. The lady, who is in town at present, I saw about a week ago.

V. *Medio-Tarsal Operation.*

Case V.—The next case which I shall record is one which required the medio-tarsal, or Chopart's, amputation, which I performed some five years ago for disease, commencing in the middle cuneiform bone, which extended to the external and internal cuneiform, 2nd and 3rd metatarsal and scaphoid bones. The subject of this operation was a delicate lad about eleven years of age. There was not any history of injury. The result of this operation was seen at the Surgical Section some two years ago. The photograph here shown represents the stump three months after the operation. There was no tendency to contraction. When bringing the flaps together, I sutured the tibialis anticus and peroneus longus to the cicatrix.

VI. *Excision of the Os Calcis, Astragalus, and portions of the Tibia and Fibula for Disease.*

Case VI.—E., a gentleman about forty years of age, was admitted into the City of Dublin Hospital under my care in October, 1885. He gave the following history:—

"Whilst in India, 14 years since, a Buggy wheel went over my left foot, which discoloured the instep and caused me to be lame for a short time. Again, about five years since, the same foot was a second time run over, which in no way inconvenienced me for about three years. It then pained me on walking much, and eventually became swollen, and a sinus formed last March two years, which was cured in about two months. On using the foot again the ankle became much swollen and painful. I was then directed to give it rest and apply cold lotions. The foot did not improve, but became more painful, with constant twitching. Then for a long time I applied hot stupes with no good results, blisters were applied, and eventually iodine. Not having improved, I went by advice to China for change of air. Having returned from China, it was found that an abscess had formed, which was lanced. I remained in Calcutta for ten days, and was told that the bone was not diseased, and that I might return to my district. It had, however, soon to be lanced again, which was repeated on several occasions. Before leaving Calcutta a large quantity of the flesh which was between the sinuses on the inside of my ankle was removed. During the voyage another abscess which formed on the outside of my ankle had to be lanced. When

I arrived in London I went to St. Thomas's Hospital, where Mr. —— was of opinion that the bones were not implicated. He repeatedly lanced and scraped the sinuses, also giving medicine internally, and he was of opinion, from the way I progressed, that I would be quite well in two months. I attended at St. Thomas's Hospital for a little over three months, and then left for Dublin, October, 1885. On arrival I had an attack of ague, which I had never suffered from in India."

On examining this patient in the City of Dublin Hospital there was not any difficulty in discovering that his os calcis was extensively diseased. Four sinuses led down to diseased bone. In a few days after I passed a probe into the inferior sinus, which penetrated the astragalus. The motions of his ankle-joint were not impaired, and pressure of the astragalus against the tibia did not cause him any pain whatever.

Having fully explained to the patient the nature and extent of the disease, I told him of the operation I proposed to perform. It was a great matter to him to have the anterior portion of his foot sound, as it would enable him to ride on his return to India. Formerly an indigo planter, now the manager of an indigo plantation, it was a matter of the utmost importance that he should as speedily as possible return to his business. I was obliged, however, to delay the operation for a while on account of his attack of ague.

The operation was performed in this way:—A semilunar incision was made, such as I have described for removal of the os calcis, keeping, however, a little higher up at the posterior surface, and dissecting the flap forward. The calcaneo-cuboid articulation was next opened and the ligaments of the ankle-joints divided; the astragalus and calcis now separated, so I removed the latter bone and afterwards the astragalus. Having seized it with a lion forceps I forcibly brought it forwards and opened its articulation with the scaphoid bone. I next removed the malleoli, and with the internal the articular surface of the tibia. The flap was now adjusted and placed in position, but not pressed firmly. The lines of incision healed slowly. He was not discharged from hospital until April last, when he could bear a tolerable amount of pressure over the seat of operation. The bones which you now see show carious disease. The inner malleolus was rough, and the articular surface of the tibia congested and ecchymosed. The cast which represents the foot after operation was taken in August last, at which time he was able to wear a properly-adapted boot and walk fairly well, with the assistance of a stick. I received a letter

MR. WHEELER

On Excision of Os Calcis, Astragalus, and Malleoli.

[Falconer, Litho]

from this gentleman from Malta dated 1st of last month, in which he gave me the most favourable report of his locomotive progress. The lithograph, taken from cast, admirably shows the condition of the foot after operation.

I shall not recount in detail any of the other operations that I have successfully performed on the foot—as Syme, Hey, and Pirogoff—but may add that I have removed the cuboid bone twice, the scaphoid once, the middle cuneiform once, several times the metatarsal bones, and I have once resected the first phalango-metatarsal articulation. The results of these operations were satisfactory. It may not be uninteresting to review briefly some of the operations I have brought before this Section.

The first excision of the os calcis appears to have been performed by M. Robert, in 1837; and the first in England by Greenhow, about ten years later. I shall not discuss the advantages claimed for the various incisions recommended for the removal of the entire os calcis. Such can be found in the various works on surgery. I prefer the method which I have recorded, which is very similiar to that mentioned by Erichsen, except that I do not make the perpendicular incision, and consequently have only the one flap—horse-shoe in shape. In making the external incision the operator should be careful not to divide the tendon of the peroneus longus as it passes through the groove in the cuboid bone. Many surgeons have condemned this operation, the late Sir William Fergusson said he never found it necessary to perform such operation; Syme and Lisfranc also disapproved of it; others urge that on account of the large size of the bone—the important part that it takes in support—that its complete or even partial extirpation should be delayed as long as possible. This latter statement, indeed, appears to me to be erratic in principle, and to be one of the many reasons why the removal of the calcis may subsequently be followed by disease in other bones. I must not be understood as advocating excision of this bone without due and careful deliberation, but I wish emphatically to express my disapproval of any half measures when disease is evident, and established statistics declare that it is a favourable operation, and affords results that could scarcely be anticipated. Dissection has proved that dense tissue occupies the former situation of the bone into which the tendo-Achillis is inserted, and the short flexor muscle of the toes, together with the abductor pollicis and minimi digiti,

lose themselves. The cuboid bone inclines backwards towards the astragalus to which it is frequently united by fibrous bands.

Complete excision of the astragalus for displacement is undoubtedly of ancient origin, but for disease is of comparatively recent date. In England up to 1864 only three cases of complete removal for disease had been recorded. Assuredly, if there should not be undue delay in removal of the os calcis, greater expedition is called for when disease occurs in the astragalus. Experience has shown that amongst all the bones of the tarsus it takes a foremost place in rapid implication of adjoining osseous structures. The surgeon will act well to his patient who advises early removal of the astragalus when diseased. This operation, according to the most recent statistics, is very favourable. Mr. Hancock gives 109 cases of complete excision of the astragalus for compound dislocation, simple dislocation, and disease, out of which number 76 recovered, 16 died—a death-rate of 14·6 per cent. Of the 10 cases quoted by Hancock operated on for disease, 6 recovered with good and useful limbs, 1 underwent secondary amputation and recovered, 1 died, in 2 the result is not stated. Mr. Gant records 14 cases of complete excision of the astragalus for disease. Of these, 9 recovered, 2 underwent secondary amputation and recovered, in 2 the result was not reported, and 1 died. Excision of this bone appears to have been first performed in 1582 by a surgeon of Duisburg for accident.

Those cases that demand excision from displacement, the result of injury, must be carefully distinguished from cases of apparent dislocation, the result of hysterical contraction. In the latter class of cases, from the continual contraction of the muscles, the bone becomes much more prominent, owing to the laxity of the ligaments produced by constant tension. Mistakes of this kind can be easily obviated by observing the conditions of the parts during sleep (considering also the age and sex of the patient) or under the influence of an anæsthetic. An astragalus apparently displaced to such an extent that the patient walked on the external surface of her foot, will probably be recalled to the memory of some here present, in which excision of the astragalus was not only contemplated, but about to be performed, on an hospital patient, when the resident staff observed that during sleep the displacement disappeared. In removal of the astragalus I did not find it necessary to saw the bone at the neck and leave the head articulating with the scaphoid, to be afterwards removed. This procedure is advised by some surgeons, but is unnecessary.

With respect to contraction after Chopart's operation, I may state that experience and dissection have shown that it is not only the tendo-Achillis that may be at fault, but the flexor communis, the tibialis posticus, and the long flexor pollicis. Hence, the want of success in relieving the contraction by the division of the tendo-Achillis. Out of the three medio-tarsal operations I have performed, I have been fortunate not to have had any contraction. In one case only did I secure the tibialis anticus and peroneus longus to the site of the cicatrix. I doubt not that if the ankle-joint is kept well flexed during the process of cure that no contraction will take place; but to me it seems that the removal of the scaphoid bone plays an important part in the cause of this contraction—an additional reason in favour of those who argue that if a bone of the foot be not diseased or implicated it should not be removed, because it may happen to form the line of a particular operation.

In the last case that I have recorded—the removal of the os calcis, astragalus, and external and internal malleoli with the articulating surface of the tibia—I find in the *Lancet* of 1848 not altogether a dissimilar case recorded by Mr. Thomas Wakley, entitled "Excision of the Ankle-joint and the entire Removal of the Astragalus and Os Calcis." His incisions, however, are most complicated, and he removed a flap from the sole of the foot situated between two of the incisions made for the purpose of forming his flaps. The posterior tibial artery was cut, and the anterior tibial vessel narrowly escaped. The mode of procedure adopted by Mr. Wakley is complicated and unnecessary.

Heyfelder reports removal of the os calcis and astragalus in 1858 by a much less complicated method than that of Mr. Wakley—the second case on record. Many examples of advantageous and successful removal of the bones of the tarsus are related by Mr. Holmes in his "System of Surgery;" by Annandale in the *Edinburgh Surgical Journal* and in *St. George's Hospital Reports;* and one case is recorded in the *Lancet* of 1881, where it is stated that the entire tarsus was removed, no tendons were cut, the periosteum was preserved, and the tissues were replaced by a solid mass.

I am not aware of any successful case of the removal of os calcis and astragalus in Dublin until the one I have just reported.

In conclusion, I hope that I may state that before deciding on any particular operation it will be well to consider in what stage the disease is—whether acute or chronic, progressive or quiet, diffuse or limited. It is in the chronic and non-diffused cases that

partial operation is successful; when diffused and in large articulations partial operations are worse than useless. Again, caries following on inflammation of ligaments is much more favourable for partial excisions than when caries commences in the cancelli of the bones.

ART. XIII.—*Variations in Form of Mental Affections in Relation to the Classification of Insanity.*[a] By CONOLLY NORMAN, M.K.Q.C.P., F.R.C.S.I.; Medical Superintendent, Richmond District Asylum, Dublin.

THE question of the classification of insanity is one that has given rise to an extreme diversity of opinion among alienists. In ordinary medical treatises, and among medical men who are not specialists, the time-honoured classification of Pinel, modified by the inclusion of Monomania (Esquirol) and General Paralysis, may be said to hold the field. Meanwhile, nearly every special writer has adopted a classificatory scheme of his own. The insufficiency of the ordinary arrangement is universally acknowledged, but grave objections are made to every one of the proposed substitutes, and no approach to concord on this subject among our greatest authorities has been arrived at.

Most of the older classifications are essentially metaphysical, and are founded upon fanciful distinctions and subdivisions of the mental faculties, which may be of some value from the metaphysician's point of view, but are entirely without clinical equivalent. On the other hand, some modern schemes have gone too far in the opposite direction, and their authors seem to forget that they are dealing with an organ that has functions of its own, the aberrations of which cannot be described in terms pertinent to the functions of any other part.

Two remarkable classifications have been produced in England in recent times. One of these—the somato-ætiological of Dr. Skae—was once extensively used, but has, I think, been generally relinquished of late. It has two chief faults—first, it gives undue prominence to all those causes of insanity which act indirectly, and throws into the shade those which act directly upon the brain itself; secondly, out of about two dozen divisions, one, which cannot properly be called a class at all—namely, idiopathic in-

[a] Read before the Medical Section of the Academy of Medicine in Ireland, on Friday, January 28, 1887.

sanity—will include, in all probability, half the cases that come under our notice. The "ideal classification" which Dr. Savage suggests, but does not use—a classification founded upon the developmental periods at which insanity appears—presents this fatal objection, that the "insanity of maturity" (including at least half our cases) is a mere arbitrary phrase without physiological or pathological significance.

The classification which I have found to correspond most closely to facts, as I have seen them, is that of v. Krafft-Ebing. It appears to me that the distinction which that author, in common with several of his countrymen, makes between psycho-neuroses and conditions of mental degeneration is a genuine one, and is of the greatest value from a prognostic point of view. The psycho-neuroses he again divides, exclusive of secondary states, into Melancholia, Mania, and Stupor (Acute Dementia); the psychical degenerations into Folie raisonnante, Moral Insanity, Primary Derangement, Insanity arising from the Transformation of Constitutional Neuroses, and Periodic Insanity.

While giving a general adhesion to this scheme, I do not at all shut my eyes to the enormous difficulties that surround the whole question of classification. Cases not infrequently occur which, even though they present well-marked symptoms, are extremely puzzling, and seem incapable of being drawn within classificatory bounds. I have brought forward the three following cases, noted by me several years ago, as I think they strikingly exemplify some of the problems which an entirely satisfactory classification would solve. I must say I have been unable to locate the cases in any scheme with which I am acquainted:—

Case I.—A. B., male, aged on admission nineteen years, single, belonging to the better class of peasants; no hereditary history of insanity or other nervous affection. Patient is said to have enjoyed excellent health till the oncome of the illness about to be described. On the fourth day previous to his admission he complained of headache and lassitude, which he attributed to overworking himself at his labour. The following night he awoke screaming, wept, laughed and flung his limbs about (hysterical attack). Next day he was restless, unable to settle to anything, and talked rather incoherently on general subjects. At night he was sleepless, laughing, singing, declaring his ability to do without sleep, and so-forth. Henceforward restlessness and excitement continued and increased so much that restraint was adopted by patient's friends.

On admission.—Of middle height; thin; muscular and general deve-

lopment fair; supra-mammary portion of chest somewhat flat; light complexion; thin, transparent-looking skin, and pearly conjunctivæ. Physical examination revealed no abnormality in the thoracic viscera. Mentally, patient was excited, incoherent, restless, and hilarious; from mere lack of attention he could not reply to questions; laughed, shouted, sang snatches of songs, grimaced, and was perpetually moving about; no definite delusions, but he was apt to mistake, or seemed to mistake, those about him for his own relations; inclined to be destructive; appetite ravenous; quarrelsome and mischievous with the other patients.

The earlier progress of the case does not call for any special comment. Occasionally there was a tendency to grimace and attitudinise; now and again transient fits of weeping were mingled with the laughter that more usually associated itself with his constant flow of incoherent talk; but the general mental tone was neither theatrical nor pathetic, but simply maniacal. Violent bursts of passion occurred on slight provocation, but the attention was readily attracted to something else, and the outbreaks were of short duration. After the first fortnight the patient slept fairly, and was rarely noisy at night, save for short periods. Masturbation could not be proved, though nocturnal seminal emissions were undoubtedly unduly frequent.

When the patient had been three months under observation it was noted that the excitement had begun to abate. He answered more coherently and was less restless and noisy. About a week later he was sluggish and almost completely silent. His condition, which had at first resembled that state of dulness (probably due to exhaustion) which so often succeeds an attack of acute mania and is a herald of convalescence, now excited a suspicion of intercurrent pulmonary trouble. No physical disease, however, could be discovered; neither was there any further reason to believe that masturbation was practised. The condition rapidly developed into one presenting a perfect picture of acute dementia. The patient never moved on his own initiative; he sat perfectly still in one posture for hours. He was absolutely silent. His food required to be put far into his mouth before he would swallow. He was entirely inattentive to natural calls. Cutaneous sensibility seemed much diminished, and the conjunctiva could be brusquely touched without exciting a wink. The extremities were cold and blue, and slight swelling about the ankles was observed on one or two occasions at bedtime. In the earlier period of the maniacal state the tongue had been, as is usual in such conditions, pretty thick furred; the pupils of medium size and highly sensitive; the pulse quick and bounding. Now the tongue was clean, large, and flabby; the saliva, of which there was apparently an oversecretion, was permitted to dribble constantly; the pupils were largely dilated and extremely sluggish; the pulse was small and slow when the patient was at rest, though easily accelerated by forced movements; facial expression fixed

and vacant, atlogether irresponsive. The limbs did not remain fixed when placed in unnatural or uncomfortable postures. The patient did not resist being moved, fed, or otherwise attended to. Sleep was apparently good.

For almost three months no change was perceptible in the patient's condition. Then he began to attend to natural calls, took food of his own accord, and appeared to notice what was going on around him. By slow degrees he became active, and very gradually gained intelligence. He was discharged, recovered, eleven months and two weeks after his admission.

According to his own statement, which I see no reason to disbelieve, his memory of the events of the first (maniacal) portion of his illness is merely summary and vague. He had no recollection of being brought to the asylum. Some little time after his admission his memory became clearer, and he could relate incidents that occurred during the second month of his treatment. Later on he again lost recollection. He could not recall any memory of his second (demented) condition. He could not remember its oncome, and his first recollection is a sense of dulness and a feeling of wondering what was the matter with him. After this there were no further gaps in memory, so that this may be taken as representing the beginning of convalescence. He had no remembrance of any painful feelings or ideas or any sense of oppression or suffering of any kind.

Case II.—C. D., female, aged twenty-two years; bad family history; father and mother, who were second cousins, were both habitual drunkards. The former had died after a drinking bout some years before patient came under observation; the latter became insane shortly after her daughter, and died in the asylum. There was also a strong tendency to pulmonary phthisis on both sides. Domestic trouble and reduced circumstances had visited the family. Patient had become a servant. About six weeks before her admission to the asylum her master hanged himself, and it so happened that she was the first to find the suspended body. Ever since she had been depressed, liable to start up at night, declaring she saw a man hanging in the room, and soforth. Under the influence of increasing depression she had made an attempt to drown herself.

When admitted she was pale and thin, without physical signs of thoracic disease; intensely depressed; replying slowly and in whispers when spoken to; took little notice of anything that occurred around her. When pressed to account for her state she wept and said she only wished to die. Very sluggish; appetite miserable; forcible feeding occasionally necessary; insomnia, which was little affected by narcotics or enforced exercise. Later on it was noted that she gave expression to the delusion that her soul was lost and that the tortures of hell had already begun.

When the patient had been about nineteen months under observation

she began to be somewhat noisy, weeping and bewailing herself loudly. In a short time she was evidently less depressed, though pathetic in her mode of expression, &c. In the course of about two months the character of her illness had completely changed. There was no longer a trace of depression; she was exceedingly restless, noisy, and incoherent; in manner she was hilarious and erotic; she presented no fixed delusions; she was dirty in habits, which she had not been before, and destructive. She continued in this state up to the period of her death, which occurred from pulmonary phthisis almost two years later. There was no development in the direction of secondary dementia or insanity of a delusional type. She remained to the last in a condition of simple mania—noisy, hilarious, incoherent, restless, and erotic.

Case III.—E. H., male, aged twenty-five, shopkeeper. An elder brother, it is stated, was an epileptic, but has ceased to suffer from fits; a sister is epileptic; another sister died suddenly after a "drinking bout;" a brother is liable to uncontrollable attacks of drink-craving; one brother, who seems perfectly healthy in every way, is a man of remarkable and distinguished ability; a maternal first cousin is insane. Patient on first admission was stated by his friends to have previously enjoyed good health, and was said to have been generally sober, though it was admitted that he had been "on a spree" shortly before this illness came on.

On admission.—He was a well-nourished, strong-looking young man, somewhat pale. He presented a slight degree of alcoholic tremor, the pulse was quick and irritable, and the tongue thickly coated. He was very restless; talked incessantly and rather incoherently; said he "was in excellent health"—had been "drinking a little lately, but this was in consequence of a lady having jilted him;" he "must be discharged at once, as he was sure the lady would marry him now;" he "must return to his business;" was "quite fit for business," and had a "large number of important transactions awaiting completion on his return home," and soforth. He slept badly, and his appetite was capricious. He was very untidy in personal habits.

After admission a rapid improvement took place. He soon gained colour and appetite, and began to sleep well; the tremor disappeared; he became neat in his habits, much less talkative, and quite coherent. He ceased to be restless; he smiled at his former projects of matrimony, nevertheless there remained a certain frivolity of speech and manner. He warmly maintained that he had never been insane, never been a drunkard, or vicious in any way. "He had gotten a little excited, but never should have been deprived of his liberty." He was full of projects for improving his business, which, though not distinctly delusional, were visionary. He was perfectly self-confident and seemed in no way to

realise his true position. While he was in this state, and some two months after his admission, he was removed from the asylum by his friends contrary to my advice.

Within a few days of his discharge he went on a trip to relatives in America, "until the talk about his being in the Asylum should blow over." He returned home, however, almost immediately. His friends then noticed him dull and pre-occupied. One evening, about seven weeks after his discharge, he made a very deliberate attempt to hang himself, and was only saved by the breaking of the leather belt whereby he was suspended.

He was immediately placed under my care again. At this time he was suffering from extensive ecchymoses beneath the ocular conjunctivæ and beneath the skin of the eyelids, such as I have seen in one or two other cases of attempted suicide by hanging. He was intensely depressed; declared he was lost soul and body, could never get well, would never be the same as he was before, could not sleep or rest, and was full of misery. His account of his former life was singularly different from that which he had previously given. He said that he had practised masturbation from early boyhood. Desire for gratification by self-abuse was "very strong sometimes," and, as he says, overcame him. At other times for days or months he would regard such matters with disgust. For the last year he had been liable to seminal emissions at night and occasionally also by day when travelling on cars, &c. Since he was fifteen years of age he has been in the habit of drinking hard, keeping generally sober by day and drinking in excess at night. For many years he had been liable to strange feelings of dread. He was haunted by groundless apprehensions that he might fail in business. He was liable to be kept awake at night by an uneasiness lest the fire had not been raked out and the house might be burned. If he saw a slater on a roof he was tormented with an apprehension of what would happen if the man were to fall. He had vague, pensive, yearning feelings. He envied men whom he saw working and seeming to enjoy their labours, and thought—"If I were in that man's place perhaps I could be happy and unthinking like him," but his own lot always made him anxious. He was liable to a nameless, causeless dread, which he "could best describe as a feeling of loneliness." Such was now his description of his ordinary condition before he first became ill.

He remained under my care for about two and a half months, during which time he made several desperate suicidal attempts. On one occasion, having secreted a piece of a wire umbrella rib about six inches long, he fixed the windpipe with one hand, and with the other thrust the wire into his neck under the ear, and worked it along till he forced it into the trachea, which he stated (I believe truly) that he pierced in three separate places. No worse consequence than somewhat extensive

subcutaneous emphysema of the neck and front of chest ensued. The reasons he assigned for this and other attempts of a like nature were that his mind was in a state of torture; that he never ceased by day or night thinking of the misery of being in an asylum; and that he felt his reason would soon give way under the strain of suffering and want of sleep. He slept badly, and, as is not unusual in such cases, denied that he slept at all.

Now, taking the first of these cases, we have the following phenomena:—An attack of acute mania passing rapidly into acute dementia, and ending in complete and apparently permanent recovery. Supposing the illness to have been (as it appears to have been) a simple psycho-neurosis, we find two extremely well-marked forms of insanity inextricably associated. On the other hand, an alternation or succession of diverse symptoms undoubtedly points to a psychical degeneration. This is best seen in the very unfavourable *folie circulaire* of Falret (*folie à double forme*, Baillarger, included by von Krafft-Ebing as a subsection of periodic insanity), and the last-named author mentions that in rare cases of this affection, particularly in young men about the age of adolescence, alternation occurs between maniacal and stuporous conditions. Here, however, there was no cycle of alternations—the case terminated favourably, and the symptoms of both states were intensely marked—a condition that does not occur in *folie à double forme*. Neither was the case one of those described by Kahlbaum under the name of hebephrenia; the symptoms were too distinctly marked; there was not the prominent self-consciousness and tendency to theatrical display that are associated with that form of aberration, nor was there the characteristic progressive imbecility. Absence of motor tension sufficiently distinguishes the case from the katatonia of the same author, and indeed it has little resemblance to either form except in the anomalous succession of symptoms.

The second case was one in which degeneration was to be expected; nevertheless the symptoms were purely those of melancholia and mania. It may be said that had life been prolonged the case would have turned out to be one of *folie circulaire*, but the extreme degree of the depression and exaltation are against that view.

I am unfortunately ignorant of the termination of the third case, which deprives it of some value. It has clinical interest, as showing to what a case of exaltation may sometimes lead. The

symptoms were purely maniacal and melancholic, yet the family history and the personal history even more strongly point towards the probability of degenerative disease. In connection with the latter, however, it would be unwise to attach too much importance to the confessions and retrospects of a sufferer from acute melancholia. The absence of delusion in the second stage—the purity, as it were, of the melancholic symptoms, was remarkable. I had no certain means of finding out the patient's condition between the first and second periods of treatment, but I consider the disease to have been essentially one—that is, I do not think there was any intervening period of perfect mental health. The case differed from *folie circulaire* in the same particulars as the others already commented on.

None of the older classifications help one to understand such cases at all better. On the contrary, if we adopt the ordinary division of mental diseases, we are met by the difficulty of finding three distinct forms running into each other. Krafft-Ebing is, no doubt, right in grouping together the three typical forms that are associated with predominating emotional disturbance, and cases like those described would lead one to think that the connection is even more close than his classification suggests. The relations of the emotional to the delusional forms of aberration have been pretty clearly worked out by the Germans; the relation of the various emotional forms to each other is still obscure.

ART. XIV.—*The Present and the Future of State Medicine.*[a] By JOHN WILLIAM MOORE, B.A., M.D., M.Ch., Univ. Dubl.; Fellow and Registrar of the King and Queen's College of Physicians; Physician to the Meath Hospital, and formerly Senior Physician to Cork-street Fever Hospital; Chairman of the Sub-Section of State Medicine in the Academy of Medicine in Ireland; ex-Scholar and Diplomate in State Medicine of Trinity College, Dublin.

GENTLEMEN,—When, only two short years ago, I had the honour of delivering an Inaugural Address before the Sub-Section of State Medicine in the Academy of Medicine in Ireland, I little thought that I should so soon be called upon again to fill the

[a] An Address introductory to the Session of 1886-87, delivered in the Sub-Section of State Medicine of the Academy of Medicine in Ireland, on Thursday, February 3rd, 1887.

Chair and to open another Session in the same time-honoured, yet formal way. With, then, a grateful remembrance of your confidence in me in the past, and a calm reliance upon your forbearance towards me in the future, I will endeavour to occupy your attention for a short time with some thoughts on the Present Position and the Future Prospects of State Medicine.

Brief as the interval is since my predecessor in office—Dr. Archibald H. Jacob—addressed you from this Chair, two events of surpassing interest have occurred, within the past twelve months, to mark the onward progress of Preventive, or State, Medicine. One of these was the institution of a Society of Medical Men Qualified in Sanitary Science; the other, and in many ways the more important, event, was the recognition by the Legislature of the claims of State Medicine to a place in the Medical Register of the United Kingdom.

The Society of Medical Men Qualified in Sanitary Science was founded in June, 1886, to fulfil the following objects:—

(*a*) To obtain the registration of Sanitary Science Qualifications obtained after public examination from the various Universities and Medical Corporations of the United Kingdom.

(*b*) To obtain the better recognition by the various Sanitary Authorities of the value of such qualifications as an evidence of special knowledge in the department of Public Health.

(*c*) The initiation or promotion of such legislation as may be necessary to fulfil the above objects.

(*d*) To promote the development of Sanitary Science generally.

All medical men possessing a qualification in sanitary science obtained after public examination from a University or Medical Corporation in the United Kingdom are eligible for election as members.

In addition to this, persons eminently distinguished in the cause of sanitary science are eligible for election by the Council as honorary members.

The first President is Sir Joseph Fayrer, K.C.S.I., F.R.S.; and the Vice-Presidents are—Sir Charles A. Cameron, Sir Douglas Maclagan, President of the Royal College of Physicians, Edinburgh; and Mr. John Simon, C.B.—surely, a goodly array of leaders.

The inaugural and first annual meeting of the Society took place at the Holborn Restaurant, Holborn, London, on Thursday, July 22, 1886. The President occupied the Chair, and delivered

an interesting address, in the course of which he said that the Society promised, on the one hand, to be of great benefit to the profession of medicine by ensuring the due recognition of the rights and privileges of its members, and to the public, on the other, by guaranteeing the diffusion of sanitary knowledge and the practical application of the laws which govern the protection of health and the preservation from disease, and which indicate the most efficient means of dealing with it, should it arise.

"It is but right," observed Sir Joseph, "that in civil life, as already, indeed, happens in the public service, sanitary science, as applied to the preservation of public health, should be under medical guidance and control."

It appears from the President's Address that of the whole body of the medical profession, now numbering upwards of twenty-seven thousand, only 200 were, last June, qualified in sanitary science, of whom 175 were in the United Kingdom. At the same time, the Society included 95 members—a very large percentage of those possessed of qualifications in Public Health.

On the 25th of June, 1886, the first object of the Society, of which I have been speaking, was attained, for on that day the Medical Act, 1886 (49 and 50 Vict., chapter 48), received the Royal Assent; and the twenty-first section of this Act provides for the Registration by the General Council of Medical Education and Registration of Diplomas in Sanitary Science. It may be well to quote this epoch-making enactment, so far as State Medicine is concerned. The section runs as follows:—

"Every Registered Medical Practitioner to whom a Diploma for proficiency in Sanitary Science, Public Health, or State Medicine, has after special examination been granted by any College or Faculty of Physicians or Surgeons, or University in the United Kingdom, or by any such bodies acting in combination, shall, if such Diploma appears to the Privy Council or to the General Council to deserve recognition in the Medical Register, be entitled, on payment of such fee as the General Council may appoint, to have such Diploma entered in the said Register, in addition to any other Diploma or Diplomas in respect of which he is registered."

Within a very few days from the present date the General Medical Council will, at its sitting, be called upon to recognise, under this section of the Medical Act, 1886, some, at all events, of the qualifications in State Medicine now conferred by certain of the Universities and Medical Corporations of Great Britain

and Ireland. The bodies which at present grant such qualifications are twelve in number—the Universities of Oxford, Cambridge, Dublin, Edinburgh, London, Glasgow, Durham, and the Royal University of Ireland, the Royal Colleges of Physicians of London and Edinburgh, the King and Queen's College of Physicians in Ireland, and the Faculty of Physicians and Surgeons of Glasgow. There is a singular and lamentable discrepancy in the titles by which both the Diplomas and the subject qualified in are designated. Of the twelve bodies named, *six* give "Certificates," *three* "Diplomas," *one* a "License," *one* a "Degree," and *one* a "Qualification." Of these, *six* are granted in "Public Health," *three* in "Sanitary Science," *two* in "State Medicine," and *one* in "Hygiene."

Uniformity of title is most desirable, and in a letter to the General Medical Council, dated November 17, 1886 (from which I have culled the foregoing information), the Society of Medical Men Qualified in Sanitary Science suggest that the word "Diploma," as specially set forth in the Medical Act, 1886, is the most suitable title of qualification for registration, and that the term "Public Health" is the most suitable title for the subject qualified in. With the first of these suggestions I thoroughly concur. The second is open to question.

The section in the Act includes three synonyms, or alternative titles, of the subject qualified in—"Sanitary Science," "Public Health," and "State Medicine." With the last of these, the great names of Stokes, Rumsey, Acland, and other pioneers in this special field are identified; and, were it only for this reason, and as a fitting tribute to genius, the term "State Medicine" might well be adopted. But a more cogent and conclusive argument is that this is the most comprehensive title. Sanitary Science is only a branch—albeit an important branch—of Public Medicine, and the same remark applies to the expression "Public Health." "State Medicine," wrote Dr. Stokes,[a] "comprises Legal and Preventive Medicine, and, in fact, embraces the whole of Sanitary Science." The ætiology and prevention of disease, the registration of all sickness attended at the public expense and in public institutions, the securing of a more accurate and trustworthy determination of the causes of death, a more satisfactory performance of medico-legal investigations, a supply of more reliable medical

[a] Discourse on State Medicine, delivered before the University of Dublin on Saturday, April 6th, 1872.

evidence in Coroners' Inquests and Courts of Law, and the providing generally for scientific advice and aid to local authorities in matters of public health—"these objects" (in the words of the late Dr. Rumsey[a]) "are comprehended in, and constitute the main elements of, what we call State Medicine."

As a graduate of the University of Dublin, and as a Fellow of the King and Queen's College of Physicians in Ireland, I am proud to think that both these ancient centres of learning have elected to confer a "Diploma in State Medicine." To the University of Dublin belongs the merit of having been the very first institution in the United Kingdom to establish a qualification in State Medicine—a result due chiefly to the untiring and enthusiastic efforts of the late Regius Professor of Physic, Dr. William Stokes, ably seconded by the Rev. Dr. Haughton, then Medical Registrar of the School of Physic. So long ago as June, 1871, the first examination for the Diploma took place, when it was granted to my friends and colleagues, Dr. Arthur Wynne Foot, Dr. Gerald Francis Yeo, now Professor of Physiology at King's College, London; Dr. John Todhunter; and to myself.

The University gives a certificate or diploma of qualification in State Medicine to Doctors of Medicine, or Graduates in Medicine and Surgery of Dublin, Oxford, and Cambridge, who have passed an examination (held annually in December) in a limited course of the following subjects:—1. Law; 2. Engineering; 3. Morbid Anatomy; 4. Vital and Sanitary Statistics; 5. Chemistry; 6. Meteorology; 7. Medical Jurisprudence; 8. Hygiene; and 9. State Medicine.

Nor was the King and Queen's College of Physicians behindhand in recognising the importance of the new departure, for in 1882 it instituted a Certificate in Sanitary Science, and it has lately revised the Regulations for what is now called the "Diploma in State Medicine." The examination for this is open to Licentiates in Medicine of the College, as well as to all registered medical practitioners, and it will in future comprise the following subjects:—

1. *Law:* Sanitary Law and the Law of Evidence.

2. *Engineering and Architecture:* Construction of Dwellings and Hospitals; Ventilation, Sewage, Water Supply, Drainage; Physics and Geology, in reference to the foregoing.

[a] Remarks on State Medicine in Great Britain. By Henry W. Rumsey, M.D., T.C.D., Cheltenham. British Medical Journal. Sept. 7, 1867. Page 197.

3. *Chemistry:* with special reference to the constitution of the Atmosphere and its Impurities; Purity of Drinking Water; Food and its Adulterations; Manufactories injurious to Health; Detection of Poisons in Medico-Legal cases, in Articles of Dress, Decoration, and Food.

4. *Climatology:* Meteorology and the Geographical Distribution of Disease.

5. *Vital Statistics:* Life Tables; the Calculation of Rates of Mortality, &c.; and the drawing up of Statistical Tables and Reports.

6. *Hygiene:* especially the Causes and Prevention of Disease; a knowledge of the necessary Provision for the Sick; and an acquaintance with the Duties of a Medical Officer of Health generally.

7. *Medical Jurisprudence and Pathological Anatomy in relation thereto.*

The Royal University in Ireland also confers a "Diploma in Sanitary Science," only, however, on Graduates in Medicine of the University. The examination includes these subjects:—1. Physics; 2. Climatology; 3. Chemistry; 4. Geology; 5. Sanitary Engineering; 6. Hygiene; 7. Sanitary Law; and 8. Vital Statistics.

It will thus be seen that the Irish Universities and the Irish College of Physicians have early fostered the growth of State Medicine—a qualification in which will, no doubt, before long be sought by every medical practitioner of standing.

But let me not be understood to express unqualified approbation of the attitude of these great institutions towards State Medicine. In one respect they have failed in their duty, so far that up to the present they have made no provision for the systematic teaching of the Principles of Public Health. In this, they might well have followed long since the initiative of the Royal College of Surgeons in Ireland, which founded, on November 1, 1841, a Professorship of Hygiene, or Public Health. Dr. Henry Maunsell was appointed to the new Chair on December 13 of the same year, but resigned on May 22, 1846. An "interregnum" followed, which lasted until 1864, when Dr. Edward Dillon Mapother was elected Professor. He was in turn succeeded, on April 9, 1868, by Dr. (now Sir) Charles A. Cameron, who at present fills the Chair. The President and Council of the College have also just founded a Diploma in Public Health.

In the "Discourse" delivered in 1872, from which I have

already quoted, Dr. Stokes said:—"It is plain that the old teaching Universities are in the best position for instruction in State Medicine, and in this place (the University of Dublin) the existence of a School of Engineering, many of the pupils of which now occupy important positions in various parts of the world, gives it a peculiar advantage." And the same eloquent address concluded with the words:—

"The principles of the Science of Public Health will be taught in our Universities, and from them downwards in our elementary schools; and the influence and the light of science be brought to bear upon all men. Think of the millions of our fellowmen—brethren, subjects of the same Crown—at home or on the burning plains of India, contending miserably with, or yielding to, the multiplied evils of degradation and consequently untimely death, from whom the ignorance of their rulers as well as of themselves keeps the light of knowledge; and you will admit that it is a noble object for those who dwell in, and who govern, the homes of science—our ancient teaching Universities of these countries—to prepare and to send out over the world their disciplined and devoted soldiers of science and of ethics with the highest academical and therefore social rank, to contend with and abate those moral and physical evils, the growth of ages, the offspring of ignorance, which so long have afflicted and retarded mankind."

Nearly fifteen years have rolled by since these eloquent words were spoken, and still the reproach hangs over our Universities and our College of Physicians. But as I speak, the first faint signs of a better state of things unfold themselves to our mental vision, and it is to be hoped that ere long provision will be made for the systematic teaching of State Medicine in the School of Physic, Trinity College.

It had been long foreseen by men of far-reaching thought both within and without the medical profession that the recognition of the paramount claims of State Medicine by the Legislature on the one hand, and by the Universities and the Colleges on the other, was merely a question of time. In the foregoing observations I have endeavoured to show that the time for recognition has come, and that the future progress of State Medicine can scarcely fail to be as marvellous as it assuredly will be rapid.

In no branch of this great subject has more effective work been done of late years than in Ætiology and Prevention of Disease. Take one example: Last year Mr. W. H. Power, an Inspector of

the Local Government Board for England, made a report to the Board, which has since been published, on "Milk Scarlatina in London, 1885." On December 18, 1885, Mr. A. Winter Blyth, Medical Officer of Health of St. Marylebone, personally reported to the Local Government Board a sudden and extensive outbreak of scarlatina, which appeared to be associated with the distribution of milk from a particular retailer in South Marylebone. He described this retailer as obtaining his supplies from two farms, and the coincidence of the retail milk distribution with Marylebone scarlatina as being limited to that one portion of the milk supplies derived from a certain dairy farm at Hendon. Mr. Power, with the co-operation of Dr. E. Klein, F.R.S., and of Dr. Cameron, the Hendon Medical Officer of Health, thoroughly investigated the circumstances, with the result that the outbreak *proved* to be caused by milk taken from cows suffering from vesicles and ulcers on the teats and udders, technically called "bad quarters."[a]

At the beginning of the Winter Session of 1879–80 I delivered in the Theatre of the Meath Hospital an introductory address upon what I ventured to call "The Microcosm of Disease." In that address an account was given of the knowledge acquired up to that time as to the connection between diseased states and the presence of microscopic organisms, or microphytes, in the blood. Already at that date it had been clearly established that one or more of the forms of cleft-fungi (the *Schizomycetes* of Nägeli, from σχίζω, "I cleave," and μύκης, a "mushroom," or "fungus") had been found in the blood in two diseases—*malignant pustule* (or *splenic fever*), and *relapsing fever*. M. Pasteur had maintained that a third disease should be added to the list—namely, *septicæmia*, while a fourth had been added by Dr. Klein—the disease commonly known as "*typhoid fever*" of the pig. With this class of maladies, also, some authors, such as Oertel, Klebs, and others, had proposed to rank *diphtheria*. *Malaria*, too, had taken its place among the microphytic diseases, as had also *noma* (or *cancrum oris*) and *autumnal diarrhœa*.

But how vast the progress in such researches in the seven years which have elapsed since 1879! Look only at the bibliography of the subject which has accumulated in that short period—the tenth part of the span of human life; and even as I penned these words there came into my hands the first number of the first volume of

[a] See Practitioner, July, 1886, page 61, "On the Relation between Milk Scarlatina in the Human Subject, and Disease in the Cow."

the *Centralblatt für Bacteriologie und Parasitenkunde*, a weekly paper edited by Dr. O. Uhlworm, of Cassel, and published by Gustav Fischer, of Jena.

In the space and within the time still allowed me, I will try to give some account of a few of the results recently attained in this most attractive field of research. Incidentally, allusion may be made to two excellent contributions on the subject, which have lately appeared in the *Dublin Journal of Medical Science*—one, on the "Progress of Bacteriology," by Sir Charles A. Cameron;[a] the other, on "Micro-organisms in Relation to Surgery," by Dr. Francis T. Heuston.[b] In this latter paper the author points out that micro-organisms existed has long been suspected, as shown by allusions to their presence being made by the Roman authors, Lucretius Carus (*de Rerum Naturâ*), 95 B.C., and Terentius Varro, writer on husbandry (*de Re Rusticâ*), who died 27 B.C. Dr. Goiffon, of Lyons, in a work on the Origin of the Plague, published in 1721, writes as follows:—"Minute insects or worms can alone explain these diseases. It is true they are not visible, but it does not therefore follow they are non-existent. It is only that our microscopes are not at present powerful enough to show them. We can easily imagine insects which bear the same proportion to mites that mites bear to elephants. No other hypothesis can explain the facts. Neither the malign influence of the stars, nor terrestrial exhalations, nor miasmata, nor atoms, whether biting or burning, acid or bitter, could regain their vitality once they had lost it. If, on the other hand, we admit the existence of minute living creatures, we understand how infection can be conveyed in a latent condition from one place to break out afresh in another."

Dr. Heuston adds that amongst the first of the scientists who have recently revived this theory was Ehrenberg, who, in 1828, showed those organisms to exist; while Schwann, in 1837, stated that the atmosphere was always laden with fermentative and putrefactive germs; and Henle, writing in 1840, stated that the contagiousness of infective diseases was due to the presence of living germs in the body. But these isolated statements received little attention until Pasteur, in 1857, was enabled to show by his cultivations of micro-organisms in fluid media, that certain micro-organisms, after having passed through many generations in suitable cultivation grounds, were still capable of propagating to

[a] Vol. LXXXII. No. 179. New Series. November, 1866.
[b] Vol. LXXXIII. No. 181. New Series. January, 1887.

inoculated animals an identical disease to that from which they were originally obtained. He thus proved that there existed micro-organisms which were capable of transmitting distinct and separate diseases, and that definite results were to be obtained by definite propagations.

The aggregation of this knowledge into definite theory has been matured only within the last few years, and this has been due chiefly to the genius of Koch, who, by the introduction of solid cultivation grounds, has been enabled to obtain much more certain results than were possible by the use of Pasteur's fluid media. By this method the micro-organisms which give rise to a number of diseased conditions have been differentiated.

The mention of the name of Koch reminds us of the marvellous light which has been shed on the nature and ætiology of the tubercular diseases by his discovery of the *Bacillus tuberculosis.*

On the 24th of March, 1882, Dr. Robert Koch laid before the Physiological Society of Berlin a communication on the "Ætiology of Tuberculosis," which was afterwards published in the second volume for 1884 of the *Mittheilungen aus dem Kaiserlichen Gesundheitsamte.* This monograph has lately been translated for the New Sydenham Society by Mr. Stanley Boyd, F.R.C.S. Eng., Assistant-Surgeon to Charing Cross Hospital.[a]

"For a strict proof," writes Mr. Watson-Cheyne,[b] "that a micro-organism is the cause of a disease three things are necessary:—Firstly, the same species of micro-organism must be constantly present in the affected parts, at any rate during the early period of the disease; secondly, the organisms must be cultivated apart from the body, and thus separated from all the morbid materials; and thirdly, their reintroduction in a suitable manner into the body of an animal capable of being attacked by the disease must be followed by its production."

These three conditions have all been fulfilled in the case of the *Bacillus tuberculosis.* Stated briefly, tuberculosis is a parasitic disease—the parasite is a bacillus, which may be distinguished from all other bacilli by its remarkable behaviour towards the colouring reagent "vesuvin." It is a slender, rod-shaped, motionless body, in length one-quarter, or one-half, or even the whole diameter of a red blood-corpuscle, with or without oval spores

[a] Recent Essays by various Authors on Bacteria in relation to Disease. New Sydenham Society. Vol. CXV. London: H. K. Lewis. 1886.

[b] Ibid. Preface.

clinging to it. Here is Koch's own account of his discovery of it:[a]—

"With regard to tuberculosis, it was to be expected that the discovery of pathogenic organisms might be attended with unusual difficulty, since many attempts had been made to demonstrate them without producing satisfactory results.

"I began my investigations with material in which the infective virus might confidently be expected to exist—for example, recently developed grey tubercle from the lungs of animals killed three or four weeks after inoculation. Sections of such organs hardened in alcohol were prepared and examined for bacteria after the most trustworthy methods. Grey tubercles were also crushed, spread on cover-glasses, dried, and then examined for the presence of micro-organisms. Every attempt to discover bacteria or other micro-organisms in these preparations was unsuccessful. Earlier observations having shown that in certain cases the deepest staining and clearest differentiation of bacteria from surrounding tissues were yielded by the use of stains which were of alkaline reaction, advantage was taken of this fact. Of the common aniline dyes, methylene blue bears the freest addition of alkalies. Therefore this staining material was chosen; and to a watery solution of it caustic potash was added, so long as no precipitate formed, and so long as the fluid remained clear. For this purpose 1 c. cm. of a concentrated alcoholic solution of methylene blue was mixed with 200 c. cm. of distilled water and well shaken; to this 2 c. cm. of a 10 per cent. solution of caustic potash were added, the mixture being repeatedly shaken. When cover-glass preparations were exposed to this staining fluid for twenty-four hours very fine rod-like forms became apparent in the tubercular mass for the first time, having, as further observation showed, the power of multiplication and of spore formation, and hence belonging to the same group of organisms as the anthrax bacilli. It was incomparably more difficult to recognise these bacilli in sections, amongst the heaped-up nuclei and masses of detritus, and an attempt was consequently made to render the tubercle-bacilli more evident by contrast-staining, according to the method by which Weigert succeeded in colouring splenetic fever bacilli with one tint and the surrounding tissues with another. This object was attained by using a concentrated watery solution of vesuvin, with which the blue-stained cover-glass preparations

[a] Loc. cit. Pp. 73, 74.

and sections were treated until they appeared perfectly brown to the naked eye. Microscopic examination then showed that only the previously blue-stained cell-nuclei and detritus had become brown, while the tubercle-bacilli remained of a beautiful blue, and stood out clearly from their surroundings, so that they were easily recognised even amongst dense masses of nuclei. In the above process methylene blue does not colour the bacilli very deeply, and some practice is needed to demonstrate them successfully in all tubercular organs.

"Another method, by which the bacilli are very deeply stained, we owe to Ehrlich. I use it now exclusively, and recommend it highly to all who are beginning to work at the bacilli of tubercle."

Ehrlich's staining fluid is prepared from aniline water and a saturated solution of methyl violet or fuchsin; and it is a modification of this process, called the Ehrlich-Weigert method, which is in general use at the present time.

Now let us see what are the tuberculous processes in which this specific micro-organism is present.

First, *Miliary Tuberculosis.* Koch examined nineteen cases in which tubercle, in the form of miliary or sub-miliary grey nodules, usually with white or slightly yellow centres, affected several organs—lungs, brain, liver, spleen, and kidneys. In no cases were bacilli absent from the nodules. The smaller and more recent the granulation, the more abundant were the bacilli, particularly in the centre. As soon as the middle of the nodule refuses to stain, showing caseation to have begun, the number of bacilli decreases. In the liver and spleen the bacilli were almost exclusively found in the giant-cells. The tubercles in the meninges of the brain were almost without exception very rich in tubercle-bacilli.

Secondly, *Pulmonary Phthisis.* Twenty-nine cases were examined, and tubercle-bacilli were found in all—most abundantly where there was recent caseous infiltration, and in the interior of cavities the walls of which were undergoing rapid softening. The smaller their number, the more did they seem limited to the interior of giant-cells.

Thirdly, *Tuberculosis locally affecting certain organs*, such as the tongue, the pelvis of the kidney, the bladder and urethra, the supra-renal capsules, the uterus and Fallopian tubes—in all these, dense masses of tubercle-bacilli were found. On the contrary, in tubercular testes and in two cases of large solitary tubercular foci

from the brain, the presence of the bacilli was limited to the giant-cells.

Fourthly, *Scrofulous Glands.* Twenty-one cases were examined in which the glands were evidently tubercular—that is, they contained epithelioid cells grouped together in masses and enclosing a greater or less number of giant-cells. Tubercle-bacilli could be found only in glands where this tubercular structure was to be seen. In several cases, on the contrary, where the glands were enlarged, softened in places, and contained collections of pus, but no epithelioid or giant-cells and no necrosed tissue, bacilli were altogether wanting. The tubercular—*i.e.*, scrofulous glands, examined were obtained from twenty-one patients—eleven aged between 10 and 20 years, seven between 20 and 30, and three aged 37, 39, and 3 years respectively. In many of these cases a phthisical family-history was given.

Fifthly, *Tuberculosis of the Joints and Bones.* Koch examined thirteen tubercular joints—namely, three hips, five knees, three elbows, one ankle, and one finger; also ten cases of tubercular disease of bone, in three of which the carpus was affected, in five the tarsus, and in two the vertebræ. Bacilli could be demonstrated in all these cases. Only in the pus from an abscess due to vertebral caries they could not be found, yet inoculation with this pus gave a positive result.

Sixthly, *Lupus.* After the anatomical investigations of Friedländer, and the positive results of inoculation obtained by Hüter and Schüller, it seemed probable that lupus too belonged to the group of true tubercular diseases. In an instructive paper on "Lupus and its Treatment," read before the Medical Section of the Academy of Medicine in Ireland, on November 21st, 1884, Dr. Walter G. Smith supported on clinical, histological, and experimental grounds the view of what he called the "Anglo-French School," that lupus has a constitutional origin, and is allied especially to scrofula. In support of this view, Dr. Smith quoted Koch's researches and experiments. Koch examined seven cases of lupus of unimpeachable diagnosis. In four of these he excised and examined microscopically portions of the skin. The tubercle-bacilli were found sparsely in each of the four cases, and only in the interior of the giant-cells. Koch made inoculations from all his seven cases into the anterior chamber of the eye of rabbits. In every instance this was followed by tuberculosis of the iris, and in those animals which lived long enough by general tuber-

culosis. Numerous tubercle-bacilli were found in these inoculation tubercles.

In studying the appearances presented by tuberculosis in animals, Koch observes that the remarkable fact came to light that the disease appears under a different aspect in each species. However extraordinary this may seem at first, it accords with what has been noticed in other bacterial diseases—for example, splenic fever. Another instance is furnished by septicæmia in the mouse; this is due to the presence of very small bacilli, which, when inoculated, cause the death of mice, but in rabbits produce only an erysipelatous affection, limited to the skin. The perfect identity, however, and unity of the tubercular process in different kinds of animals cannot be doubted when attention is diverted from the microscopic condition of tubercular organs and from the secondary changes in them—such as caseation and calcification—to the primary structure of tubercle. Koch examined cases of bovine tuberculosis (*Perlsucht* of cattle); equine tuberculosis; tuberculosis of swine, of goats and sheep, of fowls and of monkeys; spontaneous tuberculosis in guinea-pigs and rabbits, and the disease artificially induced in various animals; and he sums up all his investigations into the disease as observed both in man and in the lower animals with these words:—

"From these three facts—viz., that tubercle-bacilli are always present in tuberculosis and occur nowhere else, that they precede, both as to place and time, all the peculiar pathological changes, and that their number, appearance, and disappearance are in direct relation with the course of the disease—the conclusion may be drawn with great probability, that *the tubercle-bacillus is not a chance accompaniment of tuberculosis, but stands in the position of the direct cause of the disease.*"

In discussing the relations of the tubercle-bacilli to the ætiology of tuberculosis, Dr. Koch observes that the first question which meets us has reference to the origin of the bacilli. Do they occur anywhere in Nature independent of the human or animal organism? The answer to this question is of the highest importance, not only ætiologically, but also with regard to prophylaxis. For if tubercle-bacilli could exist in the universally distributed putrefying animal and vegetable matter, and there multiply and form spores, it would be impossible to keep these parasites away from human beings. Happily things are otherwise. Experience has shown that tubercle-bacilli grow much more slowly than any other bac-

teria; further, that they grow only in serum and in meat infusion; and, most important of all, that they require a temperature above 30° C. (86° Fahr.) to grow at all. Thus, the conditions favourable to their development do not exist together outside the animal body, and so no view is possible, but that the tubercle-bacilli are limited in their existence entirely to the animal and human organism. They are, therefore, true parasites, which cannot live without their host. They pass through the whole cycle of their existence in the body, and in no way need an open-air life to enable them to assume the "resting" form of spores, necessary for the preservation of the race.

A case of great importance in connection with the ætiology of local tuberculosis is narrated by Dr. E. A. Tscherning in the third volume of the "Fortschritte des Medicin" (No. 3, 1885). A healthy female cook, aged twenty-four years, wounded the palmar side of the first phalanx of her middle finger with a fragment of a broken vessel containing sputum expectorated by her master then dying of acute phthisis. Fourteen days after the accident, there were signs of commencing whitlow. In spite of suitable antiseptic treatment, a small painful nodule continued to be felt in the subcutaneous tissue, which was œdematous. In a month's time from the accident, Dr. Tscherning made an incision and removed by means of a sharp spoon a small granulation tumour scarcely as large as a pea, which lay between the skin and the sheath of the tendon. Notwithstanding that the wound healed by first intention, mischief went on, so that it became necessary in less than three months to remove the swollen axillary and cubital glands, and to amputate the middle finger at the metacarpo-phalangeal articulation, splitting up the palm and removing the flexor tendon with its sheath as far as the middle of the palm. The patient recovered perfectly. All the parts removed contained bacilli in greater or less numbers.

I have dwelt so long on the subject of the intimate pathology of tuberculosis that I can but mention some of the valuable *brochures* on kindred subjects which are included in the volume of the New Sydenham Society's publications, which contains Dr. Koch's monograph. They are as follow:—On the "Ætiology of Enteric Fever," by Dr. Gaffky; on "Erysipelas," by Dr. Fehleisen; "The Micrococci of Pneumonia," by Dr. C. Friedländer, of Berlin; "The Ætiology of Cholera," by Dr. Robert Koch; on "The Bacillus of Glanders," by Dr. Löffler and Professor Schütz; on "Diphtheria in

Man," by Dr. F. Löffler; on "Actinomycosis in Man," by James Israël; and a paper by Mr. W. Watson-Cheyne, entitled "Recent Researches on Micro-organisms in relation to Suppuration and Septic Diseases."

Friedländer's article on the Micrococci of Pneumonia concludes with these significant words:—

"The view that pneumonia is an infective disease has been advanced for a considerable time by investigators. Jürgensen more especially has advocated this hypothesis. During the last few years it has apparently been more and more accepted by our clinical physicians. The former demonstration of the regular occurrence of micro-organisms in this disease strengthened this view. In the present work we have, we believe, made a further advance."

It will not do to pass over in silence the work of one of the ablest, most illustrious and most veteran labourers in the field of Bacteriology—I refer to Louis Pasteur. Since 1880 he has made known[a] his researches on the attenuation of the virus of fowl-cholera, on vaccination for anthrax (Milzbrand, or Charbon) by inoculation of the attenuated virus, on an analogous vaccination for swine-plague (Rouget des porcs), and, above and before all, on vaccination for rabies by means of its attenuated virus. We are not yet in a position fairly or accurately to gauge the gain to humanity and to science which will accrue from these investigations; but we rejoice to think that the noble and cosmopolitan profession, to which we have the good fortune and the happiness to belong, has showered upon Pasteur such honours as it was in its power to bestow.

One strange suggestion is thrown out in a very recent communication to the Académie des Sciences.[b] It is that there may be such a thing as *Bacterial Suicide.*

"Can it be admitted," asks Pasteur, "that the inoculation of a virus, always of identical virulence, could be capable of producing a refractory state, when it is used in very small, but daily increasing quantities? Another interpretation may be given of the new method—an interpretation certainly at first sight very strange, but which deserves every consideration, because it is in harmony with certain facts already known with regard to the vital phenomena of certain low organisms, and notably of certain pathogenic microbes.

[a] Comptes-Rendus de l'Académie des Sciences de Paris.

[b] Comptes-Rendus. Tome CI. P. 766. Séance du Lundi, 26 Octobre, 1885.

"Many microbes appear to give origin in their cultivations to matters which are injurious to their own development.

"Since the year 1880, I have carried on researches in order to ascertain whether the microbe of fowl-cholera produced a kind of poison for itself. I have not been able to establish the presence of such a material; but I think that this study ought now to be resumed—and, so far as concerns myself, I shall not be wanting—by working in an atmosphere of pure carbonic acid gas."

In his "Report on Public Health,"[a] to which allusion has already been made, Sir Charles Cameron quotes a remarkable observation of Dr. Arthur Downes, who, in a paper read before the Royal Society, on January 14, 1886, showed that the rays at the violet end of the spectrum were inimical to the organisms associated with putrefaction and decay. The direct cause appeared to be superoxidation of the micro-organisms. So far back as 1877 Dr. Downes, in conjuction with Mr. Blunt, had noticed this effect of violet light, but the subject had since then been investigated by Tyndall, Pringsheim, Schloesing, Muntz, Warrington, and others. Recently Professor Duclaux has shown that spore-forming bacilli are less affected by sunlight than micrococci, the latter perishing in eight days when in the dry state, and in forty days when in the moist condition. The asco, or pellicle-forming, bacteria are least affected by light.

Let us turn now from this fascinating theme—the Microcosm of Disease—to consider for a moment another important branch of State Medicine—the Notification of Infectious or Infective Diseases. For several years this has been a burning question—one which, unhappily for the Public Health, still remains unsolved—at least so far as the United Kingdom in general is concerned. In Great Britain, it is true, the movement is slowly but surely making way. At the close of 1886 forty-five towns had in a practical way given in their adhesion to the principle of Compulsory Notification. Three towns obtained local Notification Acts in 1886—viz., Ashton-under-Lyne, Ripon, and Torquay. The system now applies to more than one-eighth of the extra metropolitan population of England and Wales, and exists in Scotland in Edinburgh, as well as in Greenock. In the last named town only is the medical attendant exempted from notifying cases, and there the system of notification by the householder alone has been tried and has proved a conspicuous failure.

[a] Dublin Journal of Medical Science. Vol. LXXXII. No. 179. November, 1886.

This is not the place to argue, nor would it be becoming in me from this Chair to urge the necessity of compulsory notification by the medical attendant. Suffice it to say, that, personally and as an ardent lover of my profession, I deeply regret the uncompromising attitude which the vast majority of my brethren have taken up in this matter. Rightly or wrongly, a grievous stumbling-block has been placed in the way of general legislation on the subject, and year by year an incalculable amount of injury to life and property is being done by the systematic concealment of the presence of preventable disease among the population. Nor should it be forgotten that an efficient system of Registration of Disease cannot be hoped for until the Medical Profession has consented to carry out direct Notification of Infective Disease.

Gentlemen, I would conclude this Address with the heart-stirring words of a master whom I never tire of quoting—Dr. William Stokes, one who, reflecting on the altered state of things which may result from the larger application of the Principles of State and Preventive Medicine in a more advanced condition of society, delivered this eloquent and touching peroration:—

"Every immediate and remote cause of moral and physical evil must be investigated, and, if possible, removed. National Health will be found to be connected with National Morality and Prosperity. We in our time cannot expect to solve all the problems which will be presented to us, but if a few are successfully handled we shall be thankful for the instalment. Every man in his own person may assist in removing those evils which afflict society, and even his very diseases may be made to fructify for the common good. The great instruments of Preventive Medicine will be science, legislative wisdom, and charity—that blessed and fragrant flower of the following of Christ. War, that assimilates man to the brutes, will become more odious as its collateral effects will be better understood. An important result of the application of Preventive Medicine will obviously be, that on the advent of any contagious disease, countries or communities will not, as it were, be taken by surprise. Arrangements for the care of the sick, whether in hospital or in their dwellings, and during their convalescence, will have been made beforehand, so that the mischief will be met at once, and all the difficulties, errors, and delays which, under the circumstances, so commonly occur, will be avoided.

"A time may come when the conqueror of disease will be more honoured than the victor in a hundred fights. The time may come

when no man for his own ends or for his profit will be permitted to damage the health or the well-being of his neighbour or of his servant, nor the prisoner have to suffer through the ignorance or the indifference of his jailer, while the emigrant with his loved ones will be protected from disease as he expatriates himself from the land of his birth.

"The gifts to man from Heaven—pure air, pure water, bright light, and wholesome food, will be more freely shared in, and the moral and physical evils of overcrowding, and the consequent guilt, the shame, the pestilence, will disappear. The artisan will be taught the dangers of his particular calling, and so far as law and public opinion go, be protected from them, whether he labours in a hot room, amid the roar of machinery, or deep in the earth, where he has to work in passages carved by himself of little more than two feet in height, inhaling the smoke of gunpowder and particles of silex, till his working life comes to an untimely and miserable end.

"That false morality which would ignore the existence of, and therefore would neglect, that unhappy class of the victims of society will be denounced and exposed. Infant life, concerning the preservation of which civilised England may well take her lesson from Russia, will be protected by the State. The power of science wi l be brought home to all men, as to everything that can influence health, food, drink, labour, residence, occupation; and as it touches each of these considerations, will lead all mankind to higher thoughts and purer lives."

ART. XV.—*Notes on Famine Diseases.* By ALEXANDER PORTER, M.D., F.R.C.S., M.R.I.A.; Brigade Surgeon, I.M.S.; Fellow of the Madras University; Professor of Medical Jurisprudence, Madras Medical College; and Physician to the General Hospital, Madras.

(*Concluded from page 150.*)

The intestines have been already described, but an excerpt from the report of Dr. D. D. Cunningham may be here given, as further elucidating especially the microscopic changes observable in the tissues:—

Condition of the tongue.

"The tongue in some cases was covered with a thick, creamy white fur; in others this was to a great extent absent, and the surface presented a denuded and raw

appearance. Both of these conditions were described as characteristics of the form of disease, and were regarded as indicative of different stages in the morbid process. The majority of the cases admitted into camp, in which the history and general conditions indicated that deprivation of nutritive materials had continued for long, were characterised by presenting the furred condition of the tongue just described. In those cases which progressed favourably this gradually diminished and disappeared, leaving the surface in a normal condition; but in bad cases, in which diarrhœa and dysentery subsequently set in, the fur cleared off, leaving the surface apparently raw and denuded. Numerous careful examinations were made with a view to determine the nature and origin of these phenomena. The processes which give rise to them, so far as I could ascertain, were analogous to those previously described as occurring in the epidermis, as well as to those still to be described in reference to the intestinal mucous membrane. As in the case of the epidermal tissue, there was no evidence of the occurrence of any special parasitic organisms or of the special prevalence of those forms usually encountered in the locality. The epithelial tissue was very oily, and a true fatty transformation seemed to affect the cells of the deeper layers of epithelium in greater or less extent, leading to an imperfect development of the growing cells and ready detachment of those already formed.

The stomach, mucous membrane soft and bloodless.

"The mucous membrane of the stomach was, as a rule, dead-white, quite bloodless, soft, and pulpy. It appeared as though in a state of anæmic catarrh. In one case portions of it were variegated with pale pink markings of relative congestion.

Condition of the duodenum.

"The duodenum presented the same general features as the stomach, but the softening of the tissue of the mucous membrane was much more pronounced. Only in one instance did the surface present a normal appearance, and in the majority the mucous membrane appeared to be more or less completely disorganised.

Softening and disintegration of the mucous membrane in the jejunum.

"The jejunum presented much the same appearance, but in some instances showed distinct evidences of disintegration, and disappearance of the epithelial coat, together with pigmentation and atrophy of the sub-epithelial tissue. In some cases a certain amount of relative congestion appeared in the denuded areas. The pigmentation, where present, caused the surface of the mucous membrane

to present a very peculiar aspect, the colouring matter being situated within the villi, so as to appear in fine dark points, as though some dark powder had been sprinkled over the surface.

Extensive destructive changes in the ileum.

"The mucous membrane of the ileum presented even more evident signs of change. It was generally characterised by extreme bloodlessness, but faint patches of relative congestion were sometimes present. In all cases, save one, the epithelial coat was disorganised, and in the majority it appeared to be almost entirely absent. In many instances not only was this the case, but the sub-epithelial tissues were manifestly affected to a serious extent. The solitary glands were either present in very small numbers only or could not be recognised at all, and Peyer's patches, in place of presenting their normal aspect, appeared as mere empty networks, composed of collections of minute depressions surrounded by slightly elevated ridges. This condition of the patches was very characteristic, and could not be ascribed to causes accidental to the disease, for it appeared as conspicuously in the young children as in the adults or aged people. But the evidences of loss of substance did not end here, for in most cases, over considerable areas of the gut, and in some almost universally, the adenoid tissue appeared to be virtually absent. The surface here was quite smooth, the prominences of the villi being almost or entirely unrecognisable, and the muscular coat, covered only by a thin membranous investment, seemed to form the inner lining of the tube. Surfaces of this nature corresponded with the transparent slate-coloured areas visible from the exterior of the intestine. This condition was most pronounced over the lower half or two-thirds of the ileum, but in some cases did not extend quite to the ileo-cæcal opening, a small surface intervening where the process did not seem to have progressed so far, and where the mucous membrane was still distinctly recognisable, although in a more or less disorganised and seemingly disintegrating state. In this site, too, a certain amount of relative congestion was sometimes present.

Results of microscopic examination of the tissues of the mucous membrane.

"Microscopical examination of the mucous membrane showed that the epithelium, where present, contained a large amount of fat, the cells including large quantities of oil granules. In the neighbourhood of denuded areas only abortive vestiges of cells and free granular matter were present. In places where the epithelium was absent, the sub-epithelial tissue showed more or less distinct

evidence of similar changes, the nuclei being affected in varying proportions, appearing granular, and in some cases full of distinct oil granules. This condition of the nuclei may have, to some extent, caused the appearance of pigmentation previously described, but in these cases in which the latter was strongly marked a certain proportion of true pigment granules was associated with the oily materials.

Pigmentation of the intestinal mucous membrane not uncommon in cases of wasting disease.

"It is impossible to decide whether this deposit of pigment in the mucous membrane is essentially connected with the morbid processes giving rise to the symptoms of disease in these cases. The phenomenon is not an uncommon one in cases of long-continued wasting disease, and is generally ascribed to the antecedent occurrence of minute extravasations of blood; but in the human subject, in these and in the present cases, the deposit may be due to processes similar to those causing it in the starved amphibian larvæ of the experiments. It may be due to destructive processes in the blood elements generally, rather than to local hæmorrhages and subsequent transformations, the intestinal tissues being merely the special sites of deposit, not the special sites of production of the pigment. In the more advanced stages of atrophy of the mucous membrane the nuclear elements in the villi appeared to be almost entirely absent, and the villi were represented by mere abortive processes containing collections of granular matter.

Phenomena represented by the mucous membrane of the large intestine.

"The mucous membrane of the large intestine resembles that of the small one in its extreme general anæmia. Over the greater part of the surface it was dead-white, with faint pink mottling here and there, and, as a rule, its texture was very soft. In some cases this extreme anæmia and pulpiness formed the only remarkable features—there being no thickening, effusion, or any other evidences of inflammatory action. In other cases there was more or less pronounced thickening, and, besides the general softening, distinct evidence of local loss of substance over particular areas was sometimes present. These areas, in some instances, presented characters entitling them to be termed ulcers, but in others they seemed to be merely the result of processes of disintegration and atrophy, like those so strongly developed in the mucous membrane of the small intestine. In such instances there was no evidence of congestion, and the colic lymphatic glands were pale and incon-

spicuous. The appearances presented by the mucous membrane were sometimes, however, more of the nature of those ordinarily presented in cases of dysentery. In one case this was very decidedly so. In it there was great thickening of the gut, the mucous membrane was broken up into hard rough masses of purple and green colour, distinct ulceration had occurred, there was considerable general congestion, and the lymphatic glands were turgid and of a deep purple colour.

Cases of so-called famine-dysentery really independent of true dysenteric processes.

"Taking all the phenomena into account, these cases certainly show that fatal cases of so-called 'famine dysentery' may occur in which no true dysenteric processes, as ordinarily understood, are present. The essential process appears to be of the same nature as that affecting the small intestines, but it may be complicated in various degrees by the supervention of true dysenteric changes."

Mesentery.

There was more or less fat present in the mesentery in 60 men, 34·8 per cent.; 56 women, 45·5 per cent.; and 8 children, 12·5 per cent. The fat was in large quantity in only 8 men, 12 women, and 2 children, while it was a mere trace, and of a saffron yellow colour, in 29 men, 25 women, and 6 children.

Œdema.

There was œdema of the mesentery present in about a fifth of the adults and a fourth of the children—viz., in 34 men, 22 women, and 16 children; of these there was a little fat present as well in 6 men and 5 women.

Congested.

It was congested in 22 men and 11 women; in some the injection was confined to the vessels pertaining to and in the near neighbourhood of diseased gut, while in others the whole membrane was injected, or at least the larger vessels were engorged. The omentum was congested in 2 men and 5 women.

Thickening.

The mesentery was white from some thickening of the peritoneum in 5 men and 3 women. It had white spots of organised lymph on the surface in one case and it was pigmented in another, both men.

Glands.

The mesenteric glands were of normal size in about a third of the adults and five-sixths of the children—viz., in 58 men, 37 women, and 51 children. They were enlarged and swollen in 36, or about a fifth, of the men; in 11, or about a sixth, of the children; and in 6 women; and they were so atrophied as to be hardly visible, in some cases even in the

absence of all fat, in 72 men, 41·6 per cent.; 74 women, 60 per cent.; and in 2 children. They were pigmented in 12 men, 8 women, and 2 children; they were injected red in 8 men, 7 women, and 5 children, and livid in 18 men, 11 women, and 7 children.

In some of the glands there were tubercular deposits, in 2 men and 4 women; concretions in a woman and syphilitic deposit in a man. Among enlarged glands some had suppurated in a woman, and one was in a sloughy state in a man; and among atrophied glands there was a small cyst in one, in a woman.

Liver. *Weight.* The liver weighed, on an average, 32 ozs. in the men, with a ratio to the average weight of the emaciated bodies of 1 to 38 nearly, the extremes being 15¾ ozs., with a ratio to body-weight of 1 to 71, in an old washerman who died quite a skeleton from chronic dysentery, and 58½ ozs., with a ratio to body-weight of 1 to 26·5, in a cooly of the Pully caste who died from diphtheritic dysentery with kidney disease; and in the women 28 ozs., with a ratio to average weight of emaciated bodies of 1 to 34, the extremes being 16 ozs., with a ratio to body weight of 1 to 55, in an old Pariah woman who died from chronic dysentery, and 57½ oz., with a ratio to body-weight of 1 to 23·3, in a woman of the Ventham caste who died from chronic dysentery with pelvic peritonitis.

It was under 30 ozs. in weight in 84, or nearly half the men, averaging 26 ozs. only, and in 84, or fully two-thirds the women, averaging 23·6 ozs. only; its average weight in the remaining 89 men is 37·8 ozs., and in the 39 women 38 ozs. Although these weights are very low, the ratio to body-weight is much the same as in Europeans, which is generally given as 1 to 36. In wasting disease the liver seems to lose more weight proportionately than the body generally.

Adhesions. There were abnormal adhesions between the liver and surrounding parts in 18, or fully a tenth of the men; in 16, or fully an eighth of the women; and in one child. The adhesions were of the liver to the parietes over liver abscess in 2 men; they were by points of old standing, with more or less well-marked dragging out of the hepatic tissue beneath into teat-like processes, in 8 men and 6 women; they were flocculent in 4 men and 3 women; very firm all over right lobe in 1 man, and not particularised in 6 women and the child. There

was old adhesion between the lower surface of the liver and the colon in a man, and between the fundus of the gall-bladder and the duodenum in a woman. Recent adhesions by quite soft lymph were found in two men.

Scars. There were shallow scars on the capsule in 7 men and 2 women, spots of organised lymph in 2 men and 2 women, spots of soft lymph in a man, and white streaks in the course of the vessels on the under-surface of the left lobe in another. The capsule was clouded in 3 men, 5 women, and 1 child, and pigmented in parts in 3 men and 2 women.

Furrows. There were furrows running across the convexity of the right lobe from behind forwards, varying in number from one to three, and in depth from a mere surface-marking to half an inch, in 13 men and in 23 women. In one of these women there was also a furrow across the liver from side to side, evidently arising from habitually wearing of too tight dress. This was broad and shallow, with some whitening of the capsule along its course, characteristics not usual in the other cases; and in the same woman there was a deep angular fissure on the upper part of the right lobe.

Abnormal shape. The right lobe was prominent and projecting against the falciform ligament in 4 men and 5 women, and the left lobe was long and pointed in 6 men, 5 women, and 6 children. In one case there was a ridge on the upper surface of the liver running across both lobes from side to side, in another the liver was remarkably narrow, being only four inches in breadth, and in a third there was a small accessory lobe attached to the left lobe by a fibrous band; all three were women.

State. The liver was noted flabby in 21 men, 19 women, and 7 children; plump in 26 men, 18 women, and 12 children; anæmic in 16 men, 31 women, and 12 children; *Congestion.* congested in 58, or one-third, of the men, 16, or one-eighth, of the women, and 16, or one-fourth, of the children. Of the congested livers, 1 felt almost like a bag of blood, and 6 were so much congested as to pit readily on pressure.

Healthy. It was noted healthy in appearance and in microscopic structure in 26 men (15 per cent.), 6 women, and 6 children. Its structure was also normal in congested livers in 11 men and 4 children, and in atrophied livers in 8 men and 2 women. The liver was chocolate in colour, and

had all the appearances of red atrophy, in 7 men and 6 women, and it seemed affected by simple atrophy in 4 men and 2 women. There was atrophy of the left lobe, which was reduced to a mere trace weighing as little as a drachm in one case, and it was cartilaginous in 5 men and 4 women; and in 27 men and 15 women there was a pale atrophied margin to the left lobe. This was usually only a few lines in breadth, and it was sometimes confined to the lower end or to the tip of the lobe. In 5 women there was similar atrophy of the margin opposite the fundus of the gall-bladder.

Atrophy.

Fatty degeneration was present in 112 men, 64·7 per cent.; 103 women, 83 per cent.; and in 50 children, 78 per cent. The liver was only slightly fatty in 21 men, 6 of the women, and 3 of the children; it was usually plump, of a more or less pure saffron yellow colour, and one mass of fat cells in 11 men, 25 women, and 21 children, and in the majority of the rest it was only spotted or mottled yellow, and not quite so extremely fatty. Albuminoid degeneration was looked for in every liver, but found present in none. Microscopic examination was also made of all the livers.

Degenerations.

The section of the liver presented a nutmeg appearance in 38 men, 22 per cent; 44 women, 35·7 per cent.; and in 4 children. In these the acini were distinctly mapped out by a pale margin, and all the livers were markedly fatty, except three in the men; in two of these the lobules were margined a dirty white, and in the third they had very dark red centres with paler margins.

There was more or less distinct cirrhosis of the liver in 5 men and 6 women. The hob-nail appearance was tolerably distinct in most of these cases. In one of the women there were small prominences on the surface like the papillæ of the tongue.

Cirrhosis.

Pigmentation was noted in 17 men, 6 women, and 1 child.

Abscess was found in three cases, all men. In one it was about the size of a racket ball, situated at the centre of the right lobe, and contained yellow pus, the surrounding tissue appearing healthy. This man had been a week in hospital with bowel complaint, with much sloughing of the colon, and he said he had had diarrhœa a month on admission. In another it was near the convex surface of the liver, which was adherent to the parietes, and contained about five ounces of yellow pus, the surrounding tissue being congested. This man had been in hos-

Abscess.

pital ten days with really pyæmia from chronic pneumonia of some standing; there was sloughing in the colon from effusion of pus beneath the mucous membrane as well. And in the third case it was about the size of a large filbert nut, situated close to the surface which was adherent to the diaphragm over it at the centre of the convexity of the right lobe, and it contained a substance of the consistence and appearance of thick white paint, the surrounding tissue appearing healthy. This man died from diphtheritic dysentery after ten days in hospital, having been ill four on admission.

Hydatids. In one case there was a hydatid cyst the size of an orange situated in the gall-bladder fossa, with partially ossified walls, and contents bluish-gray; bladders with clear fluid, but no hooklets observable. This man died on the day of admission from diphtheritic dysentery of ten days' standing, complicated with acute pneumonia and disease of left kidney; the liver was greatly congested.

Cavernoma. The structure known as cavernous tumour of the liver was found in two men and three women. This was usually about the size of a bean, and situated near the surface towards the centre of the convexity of the right lobe. In one of the women there was a second tumour occupying nearly half of the atrophied left lobe, being about the size of an almond in shell.

Tubercles. There were tubercular deposits in the liver of a woman who died from diphtheritic dysentery with tuberculosis, and lymphomatous growths in another

Lymphoma. woman who died from diphtheritic dysentery with pneumonic congestion. These growths consisted of some white, firm tumours the size of No. 6 shot imbedded in the surface of the liver, and were composed of lymphoid cells with some fat granules.

Scirrhus? There was a deposit like scirrhus in one case—a man who died from bowel complaint with sloughing in the colon and bloody flux. He had great tenderness over liver during the ten days he was under treatment, but no rise of temperature. By his own account he had been ill with dysentery about three weeks altogether. The liver was somewhat enlarged, and the right end was torn in removal. On section the right half of the right lobe was seen to be occupied by four closely agglomerated masses of tissue of a pale straw colour; the largest was

softened into a jelly-like mass; the others were quite fibrous, and seen under the microscope to be composed of indistinct fibres and granules. The rest of the liver was deep red and engorged with blood.

Gall-bladder.

The gall-bladder was very large, containing half a pint of dark-coloured bile, in 1 man, and its walls were œdematous in 2 men, 4 women, and 1 child. It was empty in 7 men, 3 women, and 3 children. It contained dark green viscid bile in 32 men, 18 per cent.; 35 women, 28 per cent.; and 14 children, 22 per cent.; and thin green bile in 28 men, 16 per cent.; 15 women, 12 per cent.; and in 11 children, 17 per cent. The bile was brown and thin in 9 men, 3 women, and 1 child; brown and viscid in 1 man; and it was of the appearance and consistence of olive or linseed oil in 33 men, 19 per cent.; 31 women, 25 per cent.; and 20 children, 31 per cent. In some of these it was turbid, and in others there was a green cloud or sediment present. It was thin and orange or yellow in 8 men, 5 women, and 2 children; orange and viscid in 4 men and 3 women; yellow and grumous in 7 men, 1 woman, and 2 children; milk-like in 1 child; dark-coloured in 22 men, 15 women, and 5 children; quite tarry in appearance in 2 women and 1 child; water with a green cloud in 2 men and a woman; and colour and consistence not noted in 17 men, 8 women, and 3 children. One gall-bladder was inflamed and distended with serum and pus, one was inflamed and contained pus and gall-stones, and one contained gall-stones and a little thin yellow bile—all three were in men.

Spleen.

The spleen varied a good deal in weight, and in one case there was an accessory spleen of the size of a large pea. It was lobulated in 9 men, 4 women, and 3 children. The spleens may be divided into hypertrophied, normal, and atrophied.

Hypertrophied.

Under hypertrophied may be included in men 16 spleens, varying in weight from 7 to $20\frac{5}{8}$ ozs., averaging 11·4 ozs., and giving a ratio to the average weight of the corresponding bodies of 1 to 125; and in women 9 spleens, varying from 6 to $12\frac{7}{8}$ ozs., and averaging 8·7 ozs., with a ratio to their average body-weight of 1 to 127.

Normal.

Under normal are included in men 22 spleens, varying in weight from 4 to 7 ozs., both weights inclusive, and averaging 4·8 ozs., with a ratio to their average body-weight of 1 to 258; and in women 17 spleens, varying in

weight from 3 to 6 ozs., both inclusive, and averaging 4 ozs., with a ratio to their average body-weight of 1 to 279.

Atrophied. Under atrophied are included, in men 135 spleens under 4 ozs. in weight, averaging 2·3 ozs., with a ratio to their average body-weight of 1 to 540, and in women 97 spleens under 3 ozs., averaging 1·83 ozs., with a ratio to their average body-weight of 1 to 558.

The largest spleen, weighing 20⅝ ozs., had a ratio to body-weight of 1 to 71, and was in a young man who said he had been ill three months with fever and cough, and died ten days after admission to hospital, with bases of both lungs consolidated and the colon ulcerated; and the smallest, weighing 3 drachms, had a ratio to body-weight of 1 to 2,645, and was in a woman, about 50 years old, who died from diphtheritic dysentery, with pneumonic congestion.

Capsule. The capsule was more or less thickened in 26 men, 15 per cent.; 14 women, 11·3 per cent.; and in 2 children. This consisted of considerable thickening all over in 2 men and a woman; thickening with adhesions to surroundings in 8 men; a white cloud over the surface in 4 men and 6 women; spots of organised lymph in 9 men, 7 women, and 2 children; flocculi in 1 man, and a reddish effusion in 2 men. There were abnormal adhesions to surrounding parts in all in 24 men, nearly 14 per cent.; 16 women, 13 per cent.; and in 3 children. The adhesions were by a point or two in 7 men and 10 women—in one of the latter the adhesion was to the colon; by firm bands in 5 men, 4 women, and 3 children; by a greater part of the surface of the capsule in 10 men; and they were flocculent in 2 men and 2 women.

Pulp. The spleen was firm, not friable, and deficient in pulp, with no exudation under pressure, in 112 men, 64·7 per cent.; 74 women, 60 per cent.; and in 52 children, 81 per cent. It was flaccid in 49 men, 28 per cent.; 33 women, nearly 27 per cent.; and in 3 children; and it was plump in only 11 men, 12 women, and 6 children. It was about normally friable in 17 men, 10 per cent.; 11 women, 9 per cent.; and 4 children; and very friable, breaking up under even slight pressure into brown or red pulp, like thin jam, in 17 men, 10 per cent.; 9 women, 8 per cent.; and in 1 child.

Pigmentation. It was pigmented in 22 men, 12·7 per cent.; 12 women, 10 per cent.; and in 2 children.

Deposit. In 1 woman there were tubercular deposits of the size of peas all through the substance of the spleen.

Degeneration. Albuminoid degeneration was looked for in every case, but not found present in a single one.

Kidneys. In the men the weight of the right kidney ranged from $1\frac{1}{2}$ ozs. to $6\frac{1}{8}$ ozs., the average being 2·87 ozs.; and of the left from 1 oz. to $10\frac{1}{4}$ ozs., the average being 3 ozs. fully—these give a ratio to average body-weight of 1 to 214. In the women there was one horse-shoe kidney weighing $5\frac{1}{4}$ ozs.; in the remainder the weight of the right kidney ranged from $1\frac{3}{8}$ ozs. to $4\frac{3}{4}$ ozs., the average being 2·64 ozs, and of the left from $\frac{7}{8}$ oz. to $5\frac{3}{8}$ ozs., the average being 2·7 ozs.—these give a ratio to average body-weight of 1 to 192.

Weight. In the men 114 right (67 per cent.) and 97 left kidneys (56 per cent.) were 3 ozs. in weight and under, the average weight of the former being only 2·48 ozs., and of the latter 2·44 ozs.; and in 59 right (33 per cent.) and 76 left kidneys (44 per cent.) the weight was over 3 ozs., the average for the former being 3·6 ozs., and for the latter 3·8 ozs.; and in the women 89 right (73 per cent.) and 76 left kidneys (62 per cent.) were under 3 ozs., the average weight of the former being 2·3 ozs., and of the latter 2·2 ozs.; and 33 right (27 per cent.) and 46 left kidneys (38 per cent.) were 3 ozs. and upwards, the average weight of the former being 3·5 ozs., and of the latter 3·4 ozs. Although these weights are so low, the ratio to body-weight is higher than for Europeans, as given by Quain—viz., 1 to 240.

Capsule. The capsule was more or less adherent in men in 25 pairs, 8 left and 1 right kidney, 20 per cent.—in one case the outer surface of the capsule of the right kidney was adherent to the colon; and in women in 12 pairs, 1 right and 2 left kidneys, 12 per cent. In all the children the capsule stripped easily. On stripping off the capsule the surface of the kidney was found granular in appearance in men in 6 pairs, 1 right and 2 left kidneys, and in women in 19 pairs and 2 left kidneys; the capsule was adherent as well in 5 of the men and 4 of the women.

Cysts were present in 58 men, 33·5 per cent.; and in 33 women, 26·8 per cent. These were confined to the left kidney in 9 men and 5 women, and to the right in 2 men and 3 women. They varied a good deal in number, but they were mostly small and confined to the surface; however, in two or three cases they were

of considerable size and formed the chief part of greatly-enlarged kidneys—for instance, one kidney weighing 8¾ ozs. was only 3 ozs. in weight after emptying its cysts. The contained fluid was in all these cases of a pale straw colour.

Pigmentation. There was superficial pigmentation of parts of the cortex in 5 men, 5 women, and 1 child.

Injection. The kidneys were anæmic in 31 men, 18 per cent.; 36 women, 29 per cent.; and in 14 children, 22 per cent. The cortex was anæmic, while the medulla was injected, in 19 men, 11 per cent.; 24 women, 19 per cent.; and in 11 children, 17 per cent.; and the whole substance was congested in 85 men, 50 per cent.; 31 women, 25 per cent.; and in 13 children, 20 per cent. The injection was normal in the remainder—viz., in about one-fifth of the men, two-fifths of the children, and one-fourth of the women.

Fatty. They were more or less decidedly fatty in 72 men, 41·6 per cent.; 82 women, 66·6 per cent.; and in 31 children, 48·4 per cent. Of these in 9 men, 17 women, and 10 children, they were noted very fatty; and in 39 men, 39 women, and 13 children, only slightly fatty.

Other lesions. There was a syphilitic deposit in both kidneys in a man, and in the right kidney only in a man and a woman. This was a gray softish mass in the cortex, composed of nucleated cells and fat granules. There was a small tubercular abscess in the cortex of the left kidney in a woman. In a man the left kidney was half as big again as the right, the capsule was adherent in places, and on removal disclosed small gray sloughy ulcers on the sides, and a slough on the free border of the kidney. In a woman there was suppurative interstitial nephritis of both kidneys. The cortex was semi-transparent in a man and a woman, and fibrous in another man. In the former spherical cells were seen free among the tubes, and in the latter the tubes were empty, and the structure looked like white fibrous tissue.

Normal. In the remainder—viz., in about half the men and children, and in nearly a third of the women, the microscopic structure of the kidney appeared normal, except that in 21 men, 2 women, and 3 children, desquamation cells were found in abundance; these kidneys were nearly all congested, but in 2 men they were lardaceous.

Pancreas. The average weight of the pancreas is 2·26 ozs. for the men, the extremes being 1 oz. and 4⅜ ozs.; and for the women 1·78 ozs., the extremes being ⅞ oz. and 3¾

ozs. Below is shown its average weight in each of the three classes; its higher weight in the well-nourished bodies is most probably due to the presence of fat between the lobules. Women seem to have a decidedly smaller pancreas than men.

	Men oz.	Women oz.
Emaciated, - -	2·2	1·8
Anasarcous, - -	2·19	1·8
Others, - -	2·97	2·2
Total, -	2·26	1·78

There were chalky concretions choking up the duct in one case, and a cheesy deposit in another—both men. In the latter the deposit was situated in the head of the gland, and could be enucleated. It looked tubercular, but the neighbouring lymphatic glands were not implicated, nor were the lungs, &c.; the man dying from diphtheritic dysentery. Under the microscope it was seen to be composed of fat granules and *débris*. In all others the pancreas appeared healthy.

In these cases of alvine flux the complete absence of albuminoid degeneration is noteworthy, while fatty degeneration was so common.

ACUTE MELANCHOLIA CAUSED BY IMPACTED FÆCES.

Hutchinson (*Am. Jour. of Insanity*) has detailed an interesting case of this kind occurring in a married woman of forty. At the time of her admission into the Western Pennsylvania Hospital for the Insane, the patient suffered from acute melancholia, was very weak and extremely emaciated, her skin was bronzed, dry, and harsh, her hair was dry and falling out, and all the secretions of the body were perverted. On examination, a distinct tumour could be felt through the abdominal walls, following the course of the rectum and sigmoid flexure and making the introduction of a catheter to relieve the distended bladder almost impossible. The tumour was immediately thought to be an accumulation of hardened fæces. Accordingly, the scoop and appropriate injections were employed for several days, with the ultimate result of removing the mass entirely. Rapid improvement in the patient's health, both mental and physical, followed this evacuation, so that in less than one month she was discharged, being then in the enjoyment of perfect health of body and mind alike.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

An Outbreak of Cerebro-Spinal Fever. By T. J. Maclagan, M.D., M.R.C.P.; Physician-in-Ordinary to their Royal Highnesses Prince and Princess Christian of Schleswig-Holstein. Edinburgh: Oliver and Boyd. 1886. Reprint, 8vo., pp. 34.

This pamphlet has been reprinted from the *Edinburgh Medical Journal* for August, September, October, November, and December, 1886, in which it appeared as an "Original Communication." We have read it through carefully, but with ever-increasing amazement as the author, page after page, unfolded his views and adduced the facts upon which he based them. The impression finally left upon the mind is, that Dr. Maclagan was totally wrong in his diagnosis, and that, to all appearance, he has yet to see and to observe true cerebro-spinal fever. This deliberate opinion is put forward with a lively and indelible recollection of two epidemics in Dublin—the disastrous one of 1867, and that which prevailed with less severity in 1885–86.

The outbreak of fever, which Dr. Maclagan describes, occurred in Dundee in the winter of 1877–78. Thirty-four cases were treated in the Dundee Infirmary; of these, eight died of the fever—a mortality of 23·5 per cent.—and one of erysipelas during convalescence; total death rate, 26·5 per cent.

The first group of cases occurred under the following circumstances. Early in November, 1877, P.C., a married man, was seized with an illness which *was said to be typhus fever*, for which he was treated at home, and during which he was nursed by his wife. On November 30th, while her husband was convalescing, Mrs. C. was seized with shivering, headache, and general aching, followed by febrile symptoms. A few days afterwards six of her seven children were similarly attacked, and, on the 8th of December, they were all sent to hospital. They all suffered from a sharp febrile attack of a fortnight's duration.

The foregoing are Dr. Maclagan's own words, and surely in them he gives a truthful and cleverly condensed description of a localised outbreak of typhus. He adds: "The symptoms were so much alike in each that one case will illustrate the features of all." Well, then, we shall reproduce it for the information of our readers.

"Case I.—J. C., aged 17, was seized on 3rd Dec. with shivering, headache, general pains, and sickness. Was admitted to hospital on 8th December. 9th Dec. (7th day of illness).—Did not sleep last night; complains much of intense headache; has febrile aspect; tongue furred; bowels not moved; has a short frequent cough; chest sounds normal; has had some epistaxis; has a sparse eruption on the trunk of bright red spots, not elevated, disappearing on pressure; temperature in morning 103°, in evening 104·1°; to have milk and beef-tea. 10th Dec.—Has anxious expression; is quite intelligent; had epistaxis three times in last twenty-four hours; bowels not moved; urine, sp. gr. 1031; no albumen; temperature in morning 104°, evening 103·9°; rash as last noted; to have an aperient. 11th Dec.—Bowels moved by medicine; had considerable epistaxis during the night, and again this morning; temperature in morning 103·4°, evening 104·2°; to have ʒss. of liquid extract of ergot every three hours. 12th Dec.—Profuse epistaxis again during the night, and recurring during the day; temperature in morning 102·4°, evening 105·1°; has no eruption; the red spots gone. 13th Dec. (11th day of disease).—Slept well; temperature in morning 104°, evening 103·8°; has no rash of any kind; bowels not moved since last action from aperient; repeat it. 14th Dec.—Has heavy listless aspect; sclerotics clear; answers intelligently; bowels moved; no rash; temperature in morning 102·8°, evening 103·8°; no delirium. 15th Dec.—Fair night; general condition unchanged; no more epistaxis; no eruption on skin; temperature in morning 103·6°, in evening 103·8°. 16th Dec.—The same; temperature in morning 103·2°, in evening 104°; no stool; repeat aperient. 17th Dec. (15th day of illness).—No rash on skin; temperature in morning 103·4°, evening 103·2°. 18th Dec.—Temperature in morning 102·6°, evening 101·9°. 19th Dec.—Temperature in morning 100·2°, evening 100·2°. 20th Dec. (18th day of illness).—Temperature in morning 98·4°, evening 98·6°; remained well; discharged on 4th January."

The admission of so many members of one family, Dr. Maclagan goes on to say, all ill at the same time, and all suffering from fever, together with the statement that the father of the family was just recovering from typhus, naturally led to the supposition that that was the malady—a supposition which was strengthened by its evident contagiousness. But the patients all entered the second

week of their fever without having developed the characteristic rash of that disease (notwithstanding the fact stated in the clinical record of J. C.'s case, given above), and so "it was evident that typhus was not the disease." The "natural alternative was to regard it as typhoid." But, in the absence of rose-spots and of diarrhœa (except in Mrs. C.'s case, which proved fatal), and "above all, when it was found that the mean duration of the fever was only fourteen days, it was evident that the cases were wanting in the features essential to the establishment of the diagnosis of typhoid." "There was no reason to suspect malaria; it was not relapsing fever; it was not any of the eruptive fevers; and yet it was evidently contagious. *There seemed nothing to fall back on except cerebro-spinal fever.*" Surely, this is diagnosis *par voie d'exclusion* with a vengeance.

Simultaneously with the foregoing outbreak, another very similar one occurred about a mile distant. A girl, aged twenty-five, was brought to hospital about a fortnight (? ten days) ill—the early symptoms having been—shivering, intense headache, weakness, great thirst, and complete loss of appetite. After these symptoms had lasted for a week or more, the patient seemed to have some difficulty in speaking, and became very stupid. A very faithful description this of typhus—is it not? But no—"Regarding it," says our author, "in the light thrown upon it by *the subsequent illnesses of the other members of the family, there can be no doubt that the case was one of cerebro-spinal fever, for we find within a few weeks of her illness eleven cases* OF THAT DISEASE *occurring in persons who had been, directly or indirectly, in contact with her.*"

This outbreak was limited to three families, consisting of sixteen people, of whom twelve suffered and four escaped. One of the patients was a little boy, aged four, whose illness terminated fatally on or about the fifteenth day. It began with vomiting and pain in the head and back. Then he became delirious and kept calling out as if in pain. The body was dotted over with red spots. About the tenth day his head was retracted, and the back was sometimes arched. The rash faded on the twelfth day, and he died on the fifteenth. At the autopsy—

"The only abnormalities were found in the head. On removing the calvarium, the dura mater presented a normal appearance; but on opening the membranes there flowed away a largely increased quantity of cerebro-spinal fluid. There was no general congestion, or undue fulness

of the sinuses; the choroid plexus was normal; and there was no increase of fluid in the ventricles. The pia mater covering the posterior lobes of the cerebrum was abnormally and minutely injected, and presented on its surface numerous spots both of redness and of haziness—the former congestive, the latter lymphy. The base of the brain was natural in appearance, as also was the substance of the cord. The only abnormalities were the large increase of cerebro-spinal fluid and the marked injection of the pia mater covering the posterior lobes."

We have given the *post mortem* appearances in Dr. Maclagan's own words, because they so conclusively prove that the most characteristic pathological lesions of cerebro-spinal fever were conspicuous by their absence—viz., effusion into the ventricles, fibrino-purulent deposits at the base of the brain, congestion of the sinuses and dura mater, and so on. The appearances were really such as would have been found in a child dying of typhus with cerebral symptoms. According to Murchison, in typhus, the cerebral membranes often exhibit increased vascularity, but rarely any deposit of lymph or pus indicative of recent inflammation. The congestion, in fact, is mechanical or passive. Increased effusion of serum within the cranium, according to the same learned writer, is also one of the most frequent morbid appearances in typhus. On section of the brain there are seen an unusual number of bloody points, and in the white matter a darker tint of the grey substance, and diminished consistence of the whole mass.

Time and space will not permit a synopsis of the remaining cases brought forward by Dr. Maclagan, and we must only briefly allude to some of the main points upon which he relies for a diagnosis of cerebro-spinal fever. First, he speaks of the initial symptoms as a pronounced rigor, severe and persistent headache, and "sickness of cerebral origin." He then alludes to the greater intelligence of expression, with a characteristic look of anxiety and distress, to the eruption, which "appeared in twenty-four, or 70 per cent. of the cases. It consisted of spots of a rosy-red hue, of irregular outline, not elevated, disappearing on pressure. The spots varied in size from that of a pinhead to that of a pea. Its general seat was the trunk and limbs; occasionally it was noted on the face and neck." The average duration of the fever was 16 days, the shortest 9, the longest 20 days. The maximal temperature *was generally reached by the end of the first week, and towards the end of the second it had begun to decline.* Pain in the head was intense, generally remaining severe for the best part of a week,

and then gradually diminishing or passing entirely away. Hyperæsthesia was usually present. "Tetanus" occurred only once, in a fatal case. Delirium was of the low muttering type. Deafness was frequently noted. The heart presented no abnormality, but in the asthenic cases there was enfeeblement of the systole. Albuminuria was noted in one half of the cases. The disease was eminently contagious. As regards morbid anatomy, Dr. Maclagan says the cerebro-spinal lesions were—(1) increase in the quantity of cerebro-spinal fluid, (2) lymphy effusion on the surface of the arachnoid, and (3) injection of the minute vessels of the pia mater.

Now, do not the majority of the foregoing phenomena—both before and after death—resemble typhus much more than epidemic cerebro-spinal fever? In the forty-sixth volume of this Journal will be found a classical Report upon Epidemic Cerebro-Spinal Meningitis, by Dr. Edward Wolfenden Collins, and in the following passage he recapitulates the phenomena presented by the disease for the purpose of differential diagnosis:—

"Suffice it to notice the peculiar vomiting; the violent pains in the head, neck, spine, and limbs; the stiffness and contraction of the neck and back; the trismus; the tetanic expression of countenance; the cutaneous hyperæsthesia; delirium, alternating with coma or with lucid intervals, and subsequently merging into profound insensibility; tonic and less frequently clonic spasms; paralyses of various forms and degrees, especially those dependent on lesions of the second, third, sixth, and seventh nerves; the affections of the special senses, particularly those of sight, hearing, and common sensibility; the shifting character of the pulse, temperature, and markedly of the respiration; the variety and form of the eruptions; the singular and often extreme prostration, bearing no proportion to the duration or even to the intensity of the sufferings; and, in too many instances, the appalling rapidity of the fatal issue."

When to these clinical features are added the facts that epidemic cerebro-spinal fever is very rarely met with after the age of forty, and that it is much more frequent in males than in females, there are not only grounds for doubting Dr. Maclagan's diagnosis, but all but positive proofs that it was erroneous. In his cases the fever—whatever it was—ran like wildfire through whole families—attacking grandparents, parents, and children alike, and females equally with males. There were no herpetic eruptions. The rash was roseolar on the trunk as well as on the lower limbs. The

mortality was not half as great as that of cerebro-spinal fever, the pathological appearances of which also were wanting.

On the other hand, the outbreak resembled typhus in its contagiousness, in its initial symptoms, temperature ranges, and duration. The nervous symptoms were those of typhus, while the dilated pupils, abnormally slow respirations, profound coma, and local paralyses of cerebro-spinal fever were wanting. The eruption, present in at least 70 per cent. of the cases, resembled that of typhus in appearance and manner of distribution—in six severe cases (of which three proved fatal) it was petechial; the rash was followed by desquamation. Enlargement of the spleen and albuminuria were often present, as in typhus; and death, when it did occur, happened late in the second week, and not within a few hours or a very few days, as is usual in cerebro-spinal fever.

In conclusion, it is much to be regretted that Dr. Maclagan should have published this pamphlet. There is difficulty enough already in the differential diagnosis of diseases, and particularly of the eruptive and continued fevers, and the only effect of such a *brochure* as that now under review must be to render "confusion worse confounded."

The Sanitary Record and London Medical Record Diary for 1887. London: Smith, Elder, & Co., 15 Waterloo-place.

The fifth annual issue of this useful Diary is fully up to the usual high standard of excellence, and contains a large amount of most valuable information. In the words of the preface, it is "a handy and compendious *vade mecum* for the professional man and sanitary official—a book in which he may not only record his appointments and doings of each day, and be reminded of duties which the recurrence of particular dates imposes upon him, but to which he can turn with confidence for facts, figures, statistics, suggestions, instructions, references, legal decisions, addresses, text-books, and the manifold other hints and helps for which he must otherwise have recourse to a whole library of books."

The only thoroughly unscientific and unsound item in the Diary is a meteorological table, "*showing what kind of weather will, most probably, follow the Moon's entrance into any of her quarters.*" That the moon does exert an influence on the weather may be granted; but it would be hard, indeed, to prove that "the time of New or Full moon, or of entering the First or Last Quarter," had

anything whatsoever to say to that influence. The fact is that the Sun, in the most general way, has so much to do in the matter of arranging the weather, that very little is left for the "lesser light" to achieve in that direction.

There are capital articles on "Diplomas in Public Health, or State Medicine," and on the "Notification of Infectious Diseases." Altogether, the Diary is well worth half-a-crown, its selling price to non-subscribers.

Report of Veterinary Surgeon J. H. Steel, A.V.D., *on his Investigation into an Obscure and Fatal Disease among Transport Mules in British Burma.* Blue Book. Folio. Pp. 89.

In November, 1880, Dr. G. Evans, Inspecting Veterinary Surgeon, reported on a disease then prevailing amongst horses, mules, and camels in the Dera Ismail Khan district (Panjâb). It was called "*Surra*," or "*Surrah*," by the natives, the equivalent of our "rot." The affection, though long known to the inhabitants of the district as an occasional enzoötic, was unknown to science previously to Dr. Evans' investigations. He discovered in the blood of animals affected with the disease a "living and exceedingly active parasite," eel-like in movement, in diameter one-eighth to one-tenth of a large white blood-corpuscle. The number fluctuates with the severity of the symptoms, the microbe increasing and diminishing in successive broods. At first he considered it to be a spirillum, but abandoned the idea on further observation. As to its *modus operandi*, it seems to attack and destroy the red corpuscles. Experiment showed that the disease was communicable by inoculation; by injecting water containing fresh contaminated blood, but *not* when such blood had lain for twenty-four hours and the parasites had disappeared from it. It was also found to be transmissible by inoculation to the dog. Dr. Evans' most valuable Report is given in full in the Blue Book under notice.

Since Dr Evans' discovery and description of the disease in 1880, no opportunity of further scientific investigation of it was presented until 1884–85, when an epizoötic broke out in Burma. Mr. Steel, A.V.D., was directed to inquire and report upon it, and we have the result in the Blue Book before us. After some hesitation he came to the conclusion that the Burma disease was identical with the surrah of the North-west of India; and by careful clinical investigation he was able, with the aid of the

thermometer, to supplement his predecessor's researches, and to show that the affection "is a true relapsing fever, and probably resembles closely, although it is not absolutely identical with, relapsing fever of man." He suggests "Equine Relapsing Fever" as an appropriate name; but while relapsing fever in the human subject is generally believed to be associated with famine, Mr. Steel saw no reason to infer that food had any connection with the equine disease.

If an apology is needed for our deviation from our usual course, in noticing a paper on veterinary medicine—a subject which is amply cared for in its own special journals—we plead generally the interest and importance of any fresh inquiry into the connection between disease in the higher vertebrates and the presence and multiplication of minute fungoid organisms in the blood, and, particularly, the analogy which appears to exist in this case between an equine and a human microbic disease. We do not hesitate to recommend the study of Mr. Steel's elaborate Report.[a] not to veterinary practitioners only, but also to members of our own branch of the healing art.

Report to Trustees of the Gesto Hospital, Isle of Skye. By R. M'Neill, M.D. Edin., Resident Medical Officer. 1886. Pp. 20.

This pamphlet contains a detailed analysis of the cases treated in the Gesto Hospital since its opening in 1878, copies of the regulations, diet table, &c., and remarks on the climate of the Hebrides and the chief diseases prevalent there.

Dr. M'Neill points out that diseases of the respiratory system are much less prevalent in the Islands than in the rest of Scotland, whilst diseases of the digestive organs are almost as common. This rarity of lung disease—in spite of the people being exposed to wet and disagreeable weather, and living in houses below the average standard in size and sanitary arrangements—Dr. M'Neill attributes to the climate being equable in regard to temperature and moisture, to the presence of chlorine, ozone, &c., in the air, to the atmosphere being purified by frequent gales and nearly constant rain, and to the slowness of evaporation. The effect of this depressing damp, with the counterbalancing advantages of absence of extremes, or sudden changes of heat and cold, is that the amount of phthisis

[a] A copy of Mr. Steel's Report will be found in the Library of the King and Queen's College of Physicians.

is slightly higher than in the mainland rural districts, whilst pneumonia and bronchitis are markedly lower.

Children in the Islands seem to be very free from developmental diseases, as these cause only 18 deaths per 100,000, as compared with 96 in the principal towns of Scotland, and 46 in the rural districts on the mainland.

368 cases have been treated in the hospital, with only 5 deaths; but the author, with commendable honesty, writes—"The low mortality may be accounted for by the fact that it has hitherto been considered advisable to discharge patients as soon as the prospects of recovery became hopeless. This was done in order to prevent any prejudice rising against the institution."

The Treatment of some of the Forms of Valvular Disease of the Heart. Being the Lettsomian Lectures delivered before the Medical Society of London in 1883. By ARTHUR ERNEST SANSOM, M.D. Lond., F.R.C.P. London: J. & A. Churchill. Second Edition. 1886. 8vo. Pp. 160.

IN the number of this Journal for November, 1883,[a] we noticed the first edition of this little work. It is one which will well repay a careful study. In the present edition, Dr. Sansom has endeavoured, and with gratifying success, to bring our knowledge of the pathology and therapeutics of certain heart diseases up to date. For this purpose he has laid under contribution the recent researches of Dr. Byrom Bramwell[b] and the volume of Professor Oertel on Therapeutics, as well as the labours of Dr. Osler, Orth (of Göttingen), Socin and Garrè (of Basle), and others in reference to ulcerative endocarditis and its relation to the ordinary forms of rheumatic endocarditis.

The sections on Therapeutics are most valuable. Among recent remedies, Dr. Sansom speaks highly of caffein as a heart tonic and diuretic, and of urethan (ethyl carbamate) as a hypnotic. The latter he gives in doses of 15 or 20 grains at bedtime, the former in doses of 3 to 5 grains dissolved in diluted solution of acetate of ammonium or in solutions of benzoate or salicylate of sodium. He speaks somewhat doubtfully of the value of convallaria majalis as a stimulant of the muscular fibre of the heart. As a nutritive enema in cardiac disease, with gastric disturbance, Dr. Sansom

[a] Vol. LXXVII. Page 392.

[b] See the American Journal of the Medical Sciences for July, 1886.

recommends two ounces of warm milk with one ounce of cod-liver oil, mingled by shaking in a bottle.

On several occasions, we have met with cases such as those graphically and accurately described by the author as follows:—

"Failure of compensation (in mitral regurgitation) may be first evidenced by an acute attack of inflammation of the lung. We find in such a patient pyrexia, dyspnœa, and the physical signs of a limited pneumonia. On examining the heart we obtain evidence of mitral regurgitation. Then the clinical history teaches us that the pneumonia presents characters which differentiate it from the forms which we observe in those who are not the subjects of cardiac disease. The outline of percussion dulness is clearly defined, often wedge-shaped; the signs indicate the density of a lung affected with croupous pneumonia, but not the extent of area involved in such a case. The sputum differs from the rusty viscid material of ordinary pneumonia; it is frothy, and in many cases, having continued thus for a day or two, is suddenly found to be bright with florid blood. These signs indicate infarction of a branch of the pulmonary artery, and they may be the first sign which demonstrates to us the failure of compensation in cases of mitral regurgitation. In the enfeebled right heart coagula have formed, which, projected into the pulmonic arterioles, have given rise to the symptoms I have mentioned, and to the appearances, which, when discovered at the necropsy, have been in some cases designated pulmonary apoplexy."—(Pages 80 and 81.)

It only remains for us to commend this book to our readers as a most able contribution to the bibliography of Diseases of the Heart.

Clinical Manual for the Study of Medical Cases. Edited by JAMES FINLAYSON, M.D. Second Edition. London: Smith, Elder & Co. 1886. Pp. 764.

THE second edition of this Manual is in many ways an improvement on the first. Whilst the general plan is the same, it has been thoroughly revised and brought down to date; some sections seem entirely new, and the number of illustrations has been doubled. Of course these changes have resulted in a larger volume, but this need not be regretted, as the matter is concise, and the method of arrangement renders reference easy.

After an opening chapter on Physiognomy of Disease there is a very valuable chapter on Examination and Reporting of Cases,

and another on Temperature and Pulse. The symptoms of disorder of the various parts of the body are then dealt with. The chapters on Electrical Instruments in Diagnosis and on Insanity are very readable; and that on Physical Examination of the Chest and Abdomen is an excellent one, and profusely illustrated.

At the end of each chapter is a well-selected bibliography, and 34 pages are devoted to an index.

Dr. Finlayson and his *collaborateurs* are to be congratulated on having produced such a valuable handbook.

Penny Dinners; and the best means of Dealing with Children who are Ill-fed and who do not Pay. Prize Essays issued by the Central Council for Promoting Self-supporting Penny Dinners. London: Sir Joseph Causton & Son. 1886. Pp. 64.

Soon after primary education was made compulsory in England, it was found that many of the children attending elementary schools were not only underfed but often came to school so hungry as to be incapable of learning, and the system of penny dinners was instituted. These dinners are now regularly provided in many localities, and are perfectly successful in helping the children of parents who, although able to pay, are unable, from various causes, to provide their offspring with food sufficiently nourishing, varied, and ample. But exceptional cases are met with, where the children are hungry, and yet the pennies are not forthcoming, and the present problem is how to deal with these cases without having resort to indiscriminating charity.

In 1885 the Central Council for promoting Self-Supporting Penny Dinners took up the question of how best to deal with these exceptional cases, and offered prizes for essays on the best means of helping children who are ill-fed and who do not pay because their parents or guardians are (1) indigent, (2) careless and negligent, or (3) vicious and intemperate.

The first prize was awarded to Mr. H. Gardner, of Gifford-street Board School, for a masterly essay, which is published almost *in extenso* in this pamphlet. Mr. Gardner gives a most interesting account of the institution of penny dinners in London, the difficulties met with, and how, and how far, they were overcome. The alterations made in some of the children, by what can at best be a scanty meal, seem marvellous; several boys for the first time became able to pronounce the letter "r," the intellects rapidly

developed, the percentage of "passes" became notably increased, the listless, heavy boys became lively and pugnacious. One case is admirably described:—A boy whose usual demeanour had been blank stolidity, varied by snatches of sleep, was put on a course of hot dinners, and "his usual muddy-coloured face began to take on ruddy tints; he was wide awake now, and made light of the difficulties of the alphabet. In four months he had gained flesh; he was more active than I could have imagined, and instead of listlessly lounging against the playground wall he was tearing across the yard, and whooping with the best of them. He learned to read and write, and was very quick at figures. He lost a good deal of his impediment of speech, but not entirely."

Mr. Gardner makes a strong and much-needed plea for teaching boys "handiness," advocating the opening of trade evening schools. He asserts that in twenty years' experience of school work he has not known twenty boys leave school with the intention of learning a trade, unless it was with the intention of following the father's business. In a 4d. a week school they invariably went as office boys; in a 1d. school they went as errand boys; "on arriving at sixteen years of age they naturally want more wages, and the usual answer is, 'We must have a fresh boy from school in your place.' Consequently, there is always to be seen about our streets a gang of 'hobble-de-hoys'—boys between sixteen and eighteen, with nothing to do. They are a nuisance to society in general, and a puzzle to philanthropists in particular. They are too old to learn a trade; they must sooner or later take to some form of unskilled manual labour. . . . It is from this class that most of the children spring who stand most in need of penny dinners, and are unable to pay for them."

Certainly, if as much trouble were taken during boyhood to train the hands as the heads, lads would be better fitted to earn a livelihood either at home or in the Colonies, and the health of the people would be improved.

An appendix gives interesting statistics concerning Rousden School, Devon, in which penny dinners have been supplied for ten years—a grand total of 179,183 dinners, costing (for materials) 148,930 pence. Tables of the incomes of parents, prices of materials used, and the variety and particulars of the dinners, are given.

PART III.

HALF-YEARLY REPORTS.

REPORT ON DISEASES OF WOMEN.

By William J. Smyly, M.D., Univ. Dubl.; Gynæcologist to the City of Dublin Hospital; Fellow and Censor, King and Queen's College of Physicians.

The work done during the last few months appears to have been directed rather towards strengthening positions already attained than to marked advance in new directions. To this, however, there are some important exceptions, especially as regards microscopic gynæcology, the pathological anatomy of tubal diseases, and the bi-manual examination, Sänger having shown us that the ureters can be palpated per vaginam[a]—a fact which may prove of much importance in diagnosis.

MENSTRUATION.

Two very interesting communications were made to the British Gynæcological Society at their meeting on the 23rd of June, 1886, which, if confirmed by other observers, will tend to revolutionise our present ideas on this subject. Both the authors—who approached the subject from totally different standpoints—agreed in stating that the amount of disintegration of the mucous membrane during menstruation has been greatly over-rated by previous observers, and that the theory of nidation and denidation propounded by Dr. Aveling was founded upon erroneous observations.

Dr. Bland Sutton[b] made his observations partly upon the uteri of young women who died during menstruation and partly upon those of monkeys. These investigations showed that if the specimens be badly preserved, or if a long time elapse before they are put into the hardening media, the changes described by Tyler-

[a] Arch. für Gynækol., Bd. XXVIII., S. 54.

[b] Menstruation in Monkeys. By J. Bland Sutton, F.R.C.S., &c. British Gynæcological Journal. Part VII. Nov., 1886.

Smith, John Williams, and others, may easily be made out. But when properly preserved they show at most a shedding of the epithelium of the body and fundus, as well as of that lining the utricular glands near their orifices. The epithelium of the cervix does not participate in these changes; and the Fallopian tubes remain passive, so far as their mucous membrane is concerned. Besides the loss of epithelium, there is a remarkable difference between the mucous membrane of the uterus immediately preceding and succeeding the catamenial flow. Before menstruation the tissue is everywhere infiltrated with rounded and irregular-shaped cells. These cells diminish very considerably in number after the menstrual flow has ceased, to reappear immediately before the next period. The most remarkable feature connected with menstruation in the human female, and the one most difficult of explanation, is the reproduction of the epithelium. The uterine mucous membrane possesses only a single layer of epithelium, and the same is true of the utricular glands; hence it becomes exceedingly important to know by what means the columnar epithelium lining the uterus is reproduced, especially as the doctrine is widely accepted that, except in the embryo, nothing but epithelium can produce epithelium. For this, however, he has no explanation to advance. The conclusions at which he arrives are as follows:—

1. The uterine mucous membrane is normally not shed during menstruation, but only the epithelium.

2. The sanguineous discharge is due partly to oozing from the surface denuded of epithelium, and in part to active congestion.

3. The discharge from the uterus is largely augmented by mucus secreted in increased quantity at this period from enlarged utricular glands.

The observations upon lower animals were confined to the quadrumana; and especially to the macaques and baboons, which menstruate regularly. Specimens were obtained at the first appearance of the catamenia—at the full height of the process and during its decline. In some cases the uterus was removed the instant death occurred and placed in preservative fluid. In no case did the subsequent examination show a disintegration of the mucous membrane. It seems that the only change the mucous layer undergoes is one of turgescence. The specimens obtained from monkeys have this advantage over those obtained from the human subject, that many of them having been killed for the purpose of obtaining the uterus, it was dropped within a few minutes of

death into the preservative media; for he found that in preparations badly preserved the epithelium became invariably detached, whereas in all specimens taken directly after death no epithelial shedding could be detected.

"The Menstrual Organ"[a] is the rather sensational title chosen by Dr. Johnstone for his communication. Dr. Johnstone is, as Mr. Lawson Tait explained, "one of those enthusiastic Americans who had done him the honour of coming over and settling in Birmingham as a pupil for six months," and his investigations were made upon material supplied to him by that distinguished operator, and carried out to some extent under his direction. The author's belief that he had something new to present is certainly borne out by what follows, and it is to be hoped that his investigations may soon be either verified or refuted by other observers. Unfortunately, however, the use of the high power necessary—namely, a Wales' $\frac{1}{50}$ immersion giving a magnification of 3,000, is only occasionally possible in this climate. According to Dr. Johnstone the endometrium above the internal os is not a mucous membrane in the ordinary acceptation of the term, but belongs to the so-called "adenoid" tissues, and menstruation is for it exactly what the lymph stream is to the lymph gland or the blood current to the spleen.

In order to make this intelligible he refers to a former paper of his on the "Origin of the Blood Globules," which is to be found on p. 105 of Heitzevon's "Microscopical Morphology." The central idea of that paper was a method of development that is constant in adenoid tissues, the result of which is the production of the corpuscular elements that always crowd its interstices. In this study of the spleen, &c., he found that the sustentacular threads, which at $\frac{1}{5}$ looked homogeneous, at $\frac{1}{12}$ contained a series of gradations from a granule that was barely visible at this power up to the full-grown corpuscle. Upon examining a good section of the adult endometrium, he found exactly the same thing going on; and having satisfied himself that the corpuscles of the healthy endometrium are never to be found bifurcating, as we have been taught to believe is the only method of cell reproduction, but that the developmental gradation is always present, he was convinced that the tissues belonged to the class of organs whose function it is to replace organic waste, and that it ought to be ranked with

[a] The Menstrual Organ. By Dr. Arthur W. Johnstone, of Daneville, U.S.A. Op. cit., p. 292.

the spleen and thymus gland, instead of the vagina and bladder. This being the case, its life-history ought to be that of the cytogenic organs. He has examined the uterus at all ages, and presents five sketches, which we regret that we cannot here reproduce, as the result. No. 1 shows the ultimate fibres of the endometrium of a full-grown woman, and demonstrates the gradation described. No. 2 is taken from a child eleven years old, and shows no corpuscular development. No. 3 is the endometrium of a girl, aged thirteen, who had menstruated but twice, showing beginning corpuscular development. No. 4 is from a fully-grown woman of twenty. In it everything—bands, plates, threads, and all—are seen studded with their protoplasmic outgrowths just ready to take up and nourish the ovum by forming its placenta. This is the acme of its unimpregnated development. No. 5 shows the ruin which old age brings. The large bundles are absent, and the whole membrane is thin, the corpuscles are few, and the follicles are shrunken and scanty. Thus the life-history of the uterine lining is analogous to that of the thymus gland, which is the type of the series. The quiet entry, and its persistent repose for the first thirteen years, do not invalidate its claim to a place in the class. He feels warranted in saying, that this growth once started, in the higher order of animals, under all normal circumstances, never stops, but goes on until the whole of its material is used up. Now, what becomes of the products of this growth? In the sow and cow nature has supplied this tissue with an abundant lymph stream, which in the unimpregnated state washes away the ripe material to the general circulation. But in woman, where, on account of the erect position, the uterus has to depend upon the tenacity of its fibres for the preservation of its shape, no such thing as loose tissue of a lymphatic network can be depended upon. So to preserve the integrity of the uterine wall, the emulgent stream is poured into the cavity of the body and got rid of through the vagina. The sow does not menstruate, for the same reason that the child does not. The corpuscles are so slightly developed that they do not need rapid removal. Dr. Aveling's theory of nidation, though ingenious, is erroneous. The fact that pregnancy is much more apt to occur directly after menstruation is against the acceptance of this doctrine, for no other female would lay in a nest directly after she had destroyed it. Therefore the simplest definition of menstruation is *a periodic wasting away of those corpuscles which are too old to make a placenta.* Stripped of

its epithelium, the endometrium reminds one of the sponge-like tissue of the lymph glands, and it is very easy to see how like the lymph stream the menstrual blood creeps through its meshes and washes away the corpuscles, exactly as it is constantly doing in the spleen. It may be urged against these views that if this is an independent organ how is it that the removal of the uterine appendages puts an end to its functions? His reply is that, as section of the chorda tympani practically destroys the submaxillary, and excision of a piece of the great sciatic eventually results in shrinkage of the limb, so, as shown by Mr. Lawson Tait, the closer you get to the uterine body with your excision, the more sure you are to stop menstruation, so also the more sure you are to extirpate the whole of the nerve plexus embodied in the tube and broad ligament, thus completely isolating the endometrium from the trophic and vaso-motor centres, which control it, as they do every other organ.

In the discussion which followed, Mr. Lawson Tait stated that his view had always been that tubal pregnancy was due to the results of desquamative salpingitis, and that this theory seemed to be proved by Dr. Sutton's observations, and confirmed by Dr. Johnstone's, for it was clear that so long as the epithelial lining of the tubes was preserved in its integrity, no tubal pregnancy could occur. In reply, Dr. Johnstone stated that Ercolani had proved that the first uterine change after the fertilisation of the ovum was a destruction of the epithelium, thus laying bare the adenoid tissue for the formation of the placenta, and he thought that the menstrual denudation was the explanation of the frequency of pregnancy directly after menstruation; and the fact just shown by Mr. Sutton went in the same line—that is, that under normal conditions the epithelial lining of the tube protected the adenoid layer from the passing ovum, which was thus forced to enter the uterus before finding a fit place of attachment. But when from any cause the adenoid layer is exposed the ovum is given an opportunity to adhere, and a tubal pregnancy results.

THE CONDITION OF THE MUCOUS MEMBRANE IN CASES OF MYOMA UTERI.[a]

Dr. Wyder claims priority of Dr. Campe, who described the mucous membrane in these cases in 1884, he having done so six years previously. Up to that time, however, the subject had been

[a] Wyder. Die Mucosa bei Myomen. Arch. für Gyn. Bd. XXIX., p. 36.

neglected, which is the more remarkable because it has been long known that the hæmorrhage, which is the most important symptom in uterine myomata, proceeds, in the vast majority of cases, from the mucous membrane. That such examinations are of practical as well as theoretical interest, is shown by the deductions drawn from results already published. Max. Boetticher, for example, having concluded from the microscopical appearances that myomata predispose to malignant degeneration of the mucous membrane covering them, Martin, going a step further, found in these histological discoveries an indication for their removal. Both are, according to Wyder, incorrect; and the old idea, derived from clinical experience, that fibrous tumours are rather a protection against malignant disease is more consistent with facts. From an investigation of twenty cases, and a careful comparison of their clinical histories with the microscopical appearances, he draws the following conclusions:—The thicker the muscular wall which separates a tumour from the uterine cavity the less is the circulation in the mucous membrane disturbed, and the more likely is a growth of the glandular, without any or only a slight development of the interglandular tissue. The nearer, however, such a "*connective tissue centre*" approaches the uterine cavity, and the thinner the partition wall, the more liable is the mucous membrane to interglandular hypertrophy, which may leave the glands intact, but which may also lead to their total abolition. An endometritis does not cause hæmorrhage so long as it involves chiefly the glandular structures and leaves the interglandular substance intact or nearly so. But when both are developed equally (*fungous endometritis—Olshausen*), or when one or the other grows excessively, or finally, when there is *endometritis glandularis* in one part and *endometritis interstitialis* in another, hæmorrhage is generally the result. The explanation of this is that when there is a glandular development without a participation of the interglandular substance and its vessels, there is no occasion for hæmorrhage. But when the interglandular tissue is hypertrophied, or when it undergoes a cicatricial contraction, pressure is made upon the vessels of the endometrium, which is richly supplied with thick-walled arteries, but is relatively poor in veins. When these are subjected to equal pressure, a capillary and venous congestion must result, because the arteries are less compressible than the veins.

The treatment which he considers the most rational, and advises

when practicable, is the removal of the diseased membrane by means of the curette.

THE DIAGNOSIS OF CANCER OF THE FUNDUS UTERI.[a]

The value of the curette in the diagnosis of cancer of the interior of the uterus is shown by a communication made to the Gynæcological Society of Berlin by Herr J. Veit. When he published, along with Dr. C. Ruge, their famous work on cancer of the uterus, they found but few cases of this disease scattered through medical literature. To these they added 21 cases from their own observation. Since the year 1879, in which their work closed, he has himself met with 11 more cases. The disease is therefore much more common than it was formerly supposed to be. In all, the diagnosis was made by the microscopical examination of portions removed by means of the curette, and thereby he was enabled to discover the disease at a much earlier period than was formerly possible. Of these 11 cases 7 permitted of a radical operation. One of these died in consequence. In one the disease returned during the first, in two during the second year; two were lost sight of, and one is still (after two years) healthy. These results cannot be considered favourable as regards the return of the disease, and he regards such cases as less favourable, in that respect, than those in which the disease attacks the cervix. Hofmeir's[b] statistics, founded upon 161 cases of cervical cancer operated upon in the Universitäts Frauenklinik, Berlin, up to Oct., 1885, 46 of which were total extirpations, show a large number of complete recoveries. In all these patients the condition was recorded from year to year, and he has therefore come to the conclusion, that when treated radically, in the early stage, the prognosis in this disease is, contrary to the generally received opinion, very good. The primary risk has also been greatly diminished, at least in competent hands, so that it cannot now be regarded as a very fatal proceeding. In his Report on "The Progress of Obstetrics and Gynæcology" in the October number of the *American Journal of Obstetrics*, he says that "in Schrœder's Clinic there have now been twenty-four cases of total vaginal extirpation of the uterus, in succession, without a death, fifteen of which were performed by Schrœder and nine by myself."

[a] Zur Kenntniss des Carcinoma Corporis Uteri. Herr J. Veit. Centralblatt für Gynækologie. No. 11. 1886.

[b] Ueber die Endjültige Heilung des Carcinoma Cervicis Uteri. Arch. für Gyn. Bd. XXIX., S. 353.

THE MECHANICAL TREATMENT OF BACKWARD DISPLACEMENTS OF THE UTERUS.

This subject is still open to discussion, for though the army of opponents to all mechanical treatment has almost vanished away, yet many eminent gynæcologists still give it but a half-hearted support, attaching more importance to the treatment of complications, such as descent,[a] or inflammation in the neighbourhood,[b] than to maintaining the uterus, in position. Hofmeir[c] thinks that the benefit derived from pessaries is due to the mere fixation of the cervix, because he has frequently found, that although with the Hodge pessary the displacement frequently recurred, yet the results, as regards symptoms, were very good. Fränkel (Breslau) has published the following statistics of the results of mechanical treatment in his hands. Amongst 5,180 gynæcological cases treated by him from 1882–1885, both in public and private practice, 936, or 18·07 per cent., were backward displacements of the uterus. Of these 417, or 13·8 per cent., were in private, and 519, or 24·9 per cent., were in hospital patients, 645 were retroflexions, and 291 retroversions, which disproves, he says, Bantock's statement that version is much the more common. But in the opinion of the reporter the dispute as to the relative frequency of flexions and versions is simply the result of a difference in definition. Since hospital cases are not available for showing the proportion of permanent cures, he has confined himself to the 417 private cases. From these 26 are subtracted which required no treatment, 18 in which the uterus could not be kept in place, and 39 in which the treatment was not advisable on account of firm adhesion. Accordingly, 294 cases, or 70·5 per cent., were treated mechanically. The organ was replaced manually, whenever this was possible, the sound being used on 23 occasions only. Forty-seven times it was found necessary to administer chloroform. Thomas' pessary was used almost exclusively. According to his experience labour and childbed almost never cure these displacements; but he believes that the pessary may do so, for out of these 294 cases he found that 24 were completely cured. When the Thomas' pessary is removed he introduces a small Hodge, or cradle pessary; and if these prove sufficient he then dispenses with the use of

[a] M. Duncan, "Diseases of Women," p. 413, 1886.
[b] Emmet, British Medical Journal, December, 1886.
[c] Centralblatt für Gyn., 1886.

instruments altogether. The fact that these small pessaries will keep the uterus in place after the removal of the Thomas', though they could not before its introduction, he cites as proof that the *retractores uteri* have been thereby enabled to regain their functions. The Alexander-Adams operation is to be discarded in the great majority of cases. It is, however, admissible in cases of marked prolapse with fissured cervix, and should then be combined with Emmet's operation and a Colpoperineorrhaphia. Küstner, in order to test the relative value of Mayer's ring, Hodge's, Thomas', and Schultze's figure-of-eight pessaries, had introduced them successively into fifty patients with replaceable uteri, and the result showed that the first succeeded in 14 per cent., Hodge in 18 per cent., Schultze in 86 per cent., and Thomas in 92 per cent. But he believed that if he had given the necessary time to the modelling of Schultze's pessary, he would have obtained even better results with it than he did with Thomas'.

Olshausen (*Archiv. für Gynæcol.*, Bd. XXIX., S. 311) recommends, in cases of retroversion, which are not curable by any other means, and which cause great distress, to perform laparotomy, and fix the cornua of the uterus in the wound. This is, however, especially indicated in cases where the laparotomy is performed for the removal of a tumour, which happens to be complicated by a distressing displacement, which is not curable in other ways. Dr. Frank said that in order to render the use of pessaries unnecessary, he had resorted to the following operative measures:—He separated the peritoneum from the anterior wall of the uterus, and from the posterior wall of the bladder, and turning it up in a fold, secured it with catgut sutures, thus bringing the raw surfaces in apposition. Another operative procedure, adopted by Von Rabenau, but not published until after his death, consists in a high excision of the anterior lip of the cervix, about $1\frac{1}{2}$ inches being removed. By this means the anterior convex surface is shortened, and the result of the cicatricial contraction is to bring the fundus forward. The results, however, in the six cases in which the operation was performed do not seem to have been very encouraging.

TUBAL DISEASE.

The tubes are now known to participate in the diseases of the genital apparatus with relative frequency. Thus, out of 1,000 patients examined by Martin, in the out-patient department, 63

were found to have some tubal affection.[a] Winckel found amongst 500 female subjects, which he examined *post mortem*, that the tubes were diseased in 300. This difference in numbers can, of course, be easily accounted for by a large proportion of cases escaping detection during life which are easily discoverable upon the dissecting table. Dr. Martin's observations are founded upon an experience of 287 cases. Out of these 9 only were under twenty years of age. Six were over fifty, but by far the greater number belonged to the ages of the most active sexual vigor—220 were married women, 67 unmarried, though not all of them virgins; 113 had never had children; a relatively large number—61—had aborted once or oftener; 27 once only.

The disease in the tubes was almost invariably complicated by disease elsewhere in the pelvis, especially in the uterine mucous membrane, remains of pelvic peritonitis, thickening and adhesion; inflammation of the ovaries and parametritic exudation were common, and the uterus was usually in a condition of chronic metritis or subinvolution.

Ætiology.—The sifting of these cases gives the following results:—In all the disease appeared to have occurred secondarily; in not one single case could primary disease of the tubes be determined with certainty. In 147, it resulted from the extension of chronic or acute endometritis; 70 were connected with childbirth, in which the premature termination of the pregnancy appeared to play a part with remarkable frequency; 55 patients were affected with gonorrhœa; 3 had signs of syphilis; 10 patients were tuberculous, so that in the absence of other assignable cause the disease of the tubes was also regarded as tubercular. In no case could it be determined how the disease extended from the peritoneum to the tubes, but in 11 cases he could directly observe the extension of the disease to the peritoneum. In two of these it was due to bursting of the tube, in the others to escape of fluid from the ostium abdominale. In 91 cases the disease was bilateral; in 58, on the right side, and in 138 the left tube was alone affected.

Pathological Anatomy. — Before considering the pathological anatomy it must be understood that in the normal state the tubes are lined with a delicate mucous membrane, which is destitute of glands, but rich in blood and lymph vessels. This membrane is arranged in longitudinal folds, which are destitute of villi. The

[a] Ueber Tubenerkrankung. Von Dr. A. Martin. Zeitschrift für Geburtshülfe und Gynækologie. Band XIII. 1886.

structures which appear like villi are, according to Dr. Martin, nothing but cross sections of these folds, which present a very remarkable folding, especially towards the abdominal opening. Beneath this mucous membrane lies the muscular coat, strongly developed at the uterine, but feebly so towards the abdominal end. Outside this is the peritoneal covering, which ends in a sharp line, where it meets the mucous membrane at the abdominal opening.

Dr. Martin describes two totally distinct forms of inflammation of the mucous membrane :—

Salpingitis catarrhalis.—In this a small-celled infiltration of the mucous membrane occurs, with swelling of the folds. The vessels are filled to bursting, with here and there ecchymoses, whilst the epithelium is usually preserved. When the muscular layer is attacked by a similar infiltration, so that the bundles are separated from each other, the entire tube swells into a hard cord, varying from the thickness of a pencil to that of the little finger. To this form he gives the name *Salpingitis interstitialis.*

In the other form, which he calls *Salpingitis follicularis*, there is a remarkable growth or doubling inwards of fold-like recesses in the pockets of the normal folds, which he compares to the development of erosions upon the vaginal portion of the cervix. This growth is attended by a small-celled infiltration and loss of epithelium. The tube itself becomes dilated, thickened, and elongated, and its entire wall is permeated by a labyrinth of gland-like processes.

The further development of these conditions depends (1) upon changes in the tube-wall and its peritoneal covering; (2) upon the obstruction or closure of its lumen; and (3) upon the admission of micro-organisms.

1. Besides the changes already described in the tube-wall, small-celled infiltration, follicular degeneration, and serous exudation, there is often, in chronic cases, so considerable a development of inflammatory products between the muscular elements, that the wall becomes thickened to $1\frac{1}{2}$–2 ctm. ($\frac{1}{2}$–$\frac{4}{5}$ inch). On cross-section it presents a firm mass, the lumen gapes from the rigidity of the walls, and the epithelial lining is destroyed. In comparison with this condition, a true hypertrophy of the muscular tissue due to difficulty in emptying the contents, as described by Kaltenbach and others, is very rare.

2. The closure of the tubes and their distension with fluid cause greater deformity than the changes in the walls. The stenosis or

atresia is caused either by the swelling of the mucous membrane, the folds by mutual pressure becoming denuded of their epithelium and adhering together, or by the bending of the tube. Often there are several contractions and dilatations, giving the tube the appearance of a rosary. The uterine end is frequently closed by changes in the uterine wall, swellings, new growths, displacements, &c. The abdominal end may be closed by adhesive peritonitis, either directly or by adhesion to neighbouring structures. The contents of the spaces thus formed are most frequently serous. Hydrops tubæ may, however, occur through changes in other fluids. Hæmato- and pyo- salpinx, for example, change into a clear, almost serous fluid, from which the formed elements become separated and coat the walls.

3. The micro-organisms which have hitherto been detected are those of puerperal sepsis, the gonococcus, the tubercle bacillus, and in one case that of actinomycosis (Zemann).

The puerperal septic was, in Martin's experience, the most common. The gonorrhœal was, contrary to the opinion of some, less common. It, however, more frequently attacked both tubes, and was more intractable than the puerperal, and much more so than the catarrhal form.

The tuberculous is the most injurious form, not only because the disease from its very nature infects distant organs, but because it is more liable to break down and spread to the neighbouring structures.

As regards symptoms, we have not as yet discovered any that are absolutely characteristic, though in his long series of cases Dr. Martin observed a remarkable constancy in the pain which was localised in the side of the pelvis, and was described as a dull, distressing feeling, often of a colicky character, sometimes extending to the thigh, and interfering with locomotion. The condition described as *salpingitis profluens*, described by Frankenhäuser and others—that is, the emptying of the contents of the tubes through the uterus, with violent crampy pains, was present in two cases only; and he therefore regards this as a rare symptom. Most of the patients complained of violent irregular hæmorrhages, a general loss of health, and sterility.

A certain diagnosis is to be made only by palpation. The diseased tube can be felt as a more or less tender cord of very considerable thickness, branching off from the uterus, and can, if the parietes of the abdomen are tolerably yielding, be traced from

this to the infundibulum, sometimes as a smooth cord, sometimes as a club-shaped mass, and sometimes as a sausage-like swelling.

Treatment.—He is not disposed to regard medicinal, and especially antiphlogistic, treatment as so useless in these cases as it has been represented to be, since in but one-fifth of his cases was he obliged to resort to operation. The treatment which he finds most advantageous consists in abstraction of blood from the hypogastrium and uterus combined with free purging and rest.

Only after prolonged and unsuccessful trial of such measures has he resorted to extirpation, and hitherto in 72 cases. Both tubes were removed in 32 of these, and 1 only in the remaining 42; 12 died. The operation was in most cases complicated by adhesion of the tubes to neighbouring organs, adhesion to the intestine being the most serious, and to this complication he attributes three deaths. One died of pulmonary tuberculosis, 1 of cancer, 5 of septicæmia, and in 2 the cause could not be discovered.

The contents of the tubes did not seem to be very dangerous. In several cases purulent, putrid and stinking matter escaped into the peritoneal cavity, and yet he seldom found any subsequent reaction during convalescence. Nevertheless he strives to prevent this accident by aspirating the sac before attempting its removal.

A HORN GROWING FROM THE HUMAN HEAD.

An interesting addition has just been made to the Museum of the Hôpital Saint Louis, in Paris, in the shape of a strong and solid horn, which has been surgically removed from the head of a woman residing at Hyères, in the Riviera. This appendage grew from the scalp, was twenty-one centimetres (eight inches) long, and in appearance and consistence resembles the horn of a goat. This deformity is rare, but not so much so as is generally imagined. Cloquet, the eminent anatomist, records a case; and Demarquay has collected fifty-nine cases. The late Sir Erasmus Wilson gives a very complete account of the deformity in the 27th volume of the Transactions of the Royal Medical and Chirurgical Society. Out of 90 cases mentioned therein 44 were in females, 39 in males, and the sex of 7 is unrecorded. In the New York Medical Repository of 1820 is described the case of a man from whose forehead grew a horn which had three branches and was fourteen inches in circumference. These growths have their origin in a diseased sebaceous gland; and their treatment is removal. It is necessary to destroy all remains of the offending sebaceous gland, or recurrence may happen.

F. J. B. Quinlan.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

SURGICAL SECTION.

President—Sir Wm. Stokes, M.D., President of the Royal College of Surgeons, Ireland.
Sectional Secretary—Mr. W. Thornley Stoker.

Friday, Dec. 10th, 1886.

The President in the Chair.

Conservative Surgery in Diseases of the Foot and Ankle-joint.

Mr. Wheeler read a paper on conservative surgery in disease of the foot and ankle-joint. [It will be found at page 217.]

The President congratulated Mr. Wheeler on his unbroken series of successes, but this did not tally with the experience of most operating surgeons, including his own. He had not found cases in which the disease was sufficiently limited to insure satisfactory and permanent results by partial excision, and the want of such limitation was the chief reason why Pirogoff's operation was abandoned. Indeed, he was himself one of the first, if not the first, in this country to perform excision of the ankle-joint for caries, and he obtained what seemed to be a successful result—the wound healed and the patient had the use of his foot for two years; but at the end of that period the disease manifested itself again, and contemporaneously with it there was also evidence of tubercular disease of the lungs, which prevented further operative measures. In caries of the tarsus, he would, in the majority of cases, be disposed to perform Syme's amputation at once, having regard to the liability of a recurrence of the disease in the bones which at the time of operation are

apparently healthy. He concurred with Mr. Wheeler in his remarks on Chopart's operation, that contraction did not follow. But Mr. Wheeler seemed inclined to disparage the subperiosteal method, without giving definite reasons. While the advantage of some excisions by that method were exaggerated, as in excisions of the elbow-joint, yet in others there was no doubt that it was useful, especially in the shoulder-joint, and the excision of shafts of bone, as the fibula, radius, and ulna; for in the young the preservation of the periosteum was of great importance. In excision of the elbow he did not think that better results were obtained by this than by the older method.

Mr. Croly said if there was one subject more interesting than another to him it was preservative surgery, especially that of the foot. He had had his first lesson in it from the late Mr. Tufnell in the treatment of a girl for disease of the cuneiform bones. At the time Mr. Tufnell was in the habit of doing Syme's amputation, but in this case he resolved on gouging out the cuneiform bones and leaving a foot which would enable the girl to earn her bread. Having since performed a great number of operations for disease of the ankle-joint himself, the result was that he did not like the operation for excision of the os calcis. He had not had success in saving the foot where the disease seemed to be confined to the os calcis. He removed the os calcis by a horse-shoe incision where the rest of the bones seemed sound, but it turned out that they were infiltrated. He had had, however, a most successful case in private practice of excision of the os calcis for gunshot injury where the bone was shattered and shot lodged in the os calcis, and the gentleman now had a useful foot. He had met with another case of great interest. A man fell off a horse injuring his ankle-joint, which exhibited all the evidence of compound fracture. Amputation was proposed, but the man refused to allow it. Months afterwards, when under his care, he cut down under the ankle-joint and found the astragalus was detached and that the tibia had come down and accommodated itself on the os calcis. The man was now engaged as a coachman and groom with a useful foot. With regard to the utility of potassa cum calce, a boy was brought into hospital with what seemed to be an incurable foot and a fit case for Syme's operation; but determining to give the child every chance, he bored the cuneiform bones with potassa cum calce, and the child left the hospital with a useful foot. The advantage of saving the periosteum of the os calcis bore no comparison to that of saving the periosteum of the shaft of the bones. He did not think he would try to save the periosteum of the calcis, as he would not expect a good result; and so, too, as to excision of the ankle-joint for disease, accident cases excepted. He would also be sorry to remove the foot by Syme's method, without giving a chance of saving it.

The President explained that he did not advocate a rush for amputation knives in all cases of caries of the tarsus, but only in those where

the surgeon had to determine between extensive gouging of the tarsal bones and their removal did he prefer Syme's method.

Mr. Croly said his own experience told him that the foot was a part of the body for which a good deal could be done in the way of preservative surgery. It was hard to tell where to begin, seeing that the surgeon sometimes found the cartilage sound and a bad bone under it, and *vice versâ*.

Mr. Barton distinguished between caries from disease of the bone and that from accident, which was approached by the surgeon on different lines. The experience of the practical surgeon was unfavourable to gouging or partial operations where there was extensive caries or the disease was diffused. Hutton, who had operated as Mr. Wheeler did, discountenanced the then new procedure as leading to an unsatisfactory result, and yet Mr. Wheeler, by removing a similar amount of bone without following the same line of incision, had obtained success. He himself struggled to save a foot of which the disease was only partial, and his experience was that while he had been successful in some cases, yet in a great many he had been unsuccessful, and it would have been better for the patients had he performed Syme's operation at first.

Mr. Croly asked was Syme's amputation preservative surgery?

Mr. Doyle said it seemed to him, without pretending to be a pathologist, that the specimen of bones marked "Dec. 17, '85," in the case of the patient who refused to be operated on in London, did not exhibit much disease. He would like to have the opinion of a pathologist on the point.

Mr. Franks, while sensible of the fact that the more the patient had of his own feet to walk upon the better, observed that under Syme's amputation feet and boots might be applied which would allow of the patients getting about well. The unsatisfactory results of partial excision were due, in the first instance, to foci of disease being left untouched, and secondly, to operating on patients who had sunk so low in health that they had no recuperative power in them. At the same time, the condition of the patient was often made too much of in these days of antiseptic surgery, and therefore conservative surgery might be adopted with more hope than before. In tubercular disease, however, health was a great factor—everything depended on the constitution of the patient, and caries sometimes got well without operation at all. The tendency of surgery was to the partial excisions, especially in view of the success achieved by Ollier, of Lyons, who was a great advocate for subperiosteal operations. It was obviously better to leave a periosteum that could develop bone rather than excise it with the bone, and hope for a pad of cicatricial tissue to walk upon. He witnessed a case of a girl of eighteen or nineteen years of age which impressed him with the power of the periosteum in forming bone. Mr. Bryant had by a long

excision excised the head of the thigh bone and three-fourths of the shaft, leaving the periosteum. This bone was standing by the patient's bedside. On examining the girl he found that the head and neck of the femur had re-formed, and also three-fourths of the shaft, every movement of the hip-joint being perfect. In partial excisions of the foot, he did not see why such operations should be attended with success in France and Germany and not in Ireland.

Mr. M'Ardle, looking at Mr. Wheeler's successes, said the prospects of preservative surgery were bright, but his own experience and reading pointed to a different conclusion, even with the German surgeons, and therefore he inquired whether Mr. Wheeler had given all his cases—since, if he had not, the omission of his failures would be unfair to the Academy.

Mr. Henry FitzGibbon having assisted Mr. Wheeler at the operation for the excision in the case of the Indian planter, testified to the fact that the bones were extensively diseased, including the os calcis. It was in that case a question whether there should be a Syme's amputation or excision of the os calcis. For his own part, he thought amputation would have been the better surgery, and therefore he was agreeably surprised to see the man walking well with the assistance of a stick before he left Ireland—a far better result for a man whose avocation necessitated horse exercise than could be acquired with an artificial foot. In considering the question of excision, the main point was—what was the primary cause of disease in the bones. The great distinction was between disease of bones resulting from accident and disease arising from constitutional cachexia. He had had a case himself of a girl who dropped a needle into the middle cuneiform bone, which he excised, and she made a perfect recovery. She had 32 sound teeth—a good indication of the absence of constitutional cachexia, and this was the case also with the Indian planter.

Mr. Wheeler, in reply, said he did not agree with the President in thinking that in advanced disease of the tarsus amputation by Syme's method was the correct surgery to adopt. It might have been that the President's want of success in partial excisions of bones of the foot was due to his allowing the disease to advance beyond the limits of partial operations, or his cases might not have been either in the stage or situation from which it would be reasonable to anticipate success from partial excision, and that resection of the cuboid bone or os calcis would have been more likely to succeed than resection of the middle cuneiform, even for anatomical reasons. Resection in disease following injury promised more favourably than resection for disease from constitutional causes, and likewise in disease of bones following inflammation of ligaments than when the disease originated in the bones. As regards subperiosteal resection, he thought that in resection of the os calcis it was

not advisable, no more than in resection of the elbow-joint for caries. Preserving the periosteum in resection of long bones was not analogous, but even in such cases he believed the periosteum was diseased and did not, after the operation, carry on the functions ascribed to it. The President's experience of Chopart's operation was similar to his own. Examination proved that not only was the tendo-Achillis engaged but also the flexor communis and pollicis longus muscles, and it was his custom not to relax these muscles but to extend them by keeping the ankle-joint flexed and the leg extended. If, on the contrary, the leg was kept flexed it would shorten these tendons during the healing process and favour contraction. He concurred with Mr. Barton that disease of the foot in the diffuse and progressive stages was not suitable for partial excisions, but he disapproved of gouging as tending to excite inflammation and further disease. In reference to Mr. Doyle's remarks, he had only to say there was not any difficulty in observing the disease in the bones exhibited. All his cases were communicated to the Academy exactly as they occurred, and their remarkable success excused the inquiry to that effect. One of the four cases in which he excised the os calcis died of phthisis four years after the operation.

The Section adjourned.

OBSTETRICAL SECTION.

President—A. V. Macan, M.B., M.A.O., F.K.Q.C.P.

Sectional Secretary—Andrew J. Horne, F.K.Q.C.P.

Friday, 7th January, 1887.

Dr. More Madden in the Chair.

Ovarian Tumour.

The President exhibited part of an ovarian tumour which had been developed between the layers of the left broad ligament. On opening the abdomen the tumour came into view. It was punctured, and a large quantity of fluid escaped, and then the tumour partly collapsed; but he found it impossible to pull it out. He found that it extended along the uterus to the iliac region, and filled the whole of the broad ligament. It seemed to be unilocular, and therefore he only removed the part of it which he now showed, leaving about a third of the tumour behind. He removed the peritoneal covering and tried removal by enucleation; and in some places it gave way easily enough, but afterwards he came to adhesions which rendered that mode of enucleation impossible. The woman had hardly any rise of temperature until the

second or third week after the operation, when she had a slight rise of temperature. The woman was now apparently quite well.

The PRESIDENT further exhibited specimens of ovaries removed for menorrhagia, due to fibrous tumours.

The PRESIDENT exhibited a fourth specimen of a retroperitoneal tumour which he had removed by laparotomy. On examining the patient's uterus he could not at first find that anything was wrong, but she complained of pain in the abdomen so violent that she said she would rather die than endure it. On a further examination he found that the uterus was retroflexed, and that there was something on the top of it; but having made an enlarged incision he got at the tumour, which was behind the intestines and peritoneum, and he had great difficulty in removing it, which he did by enucleation.

On the Treatment of Vaginismus.

DR. MORE MADDEN read a paper on the treatment of vaginismus. [It will be found in the Number of this Journal for February, page 129.]

DR. FRAZER said he could confirm the remark as to the possibility of pregnancy occurring without vaginal intercourse.

DR. S. MASON said a little rest, and painting the orifice with nitrate of silver, were sometimes very effectual. It was not always necessary to remove the hymen; but when that operation was done it was always well to make a lateral incision in order to expand the orifice.

The PRESIDENT said he had met only a few cases of vaginismus. As well as he remembered his reading on the subject, there were two classes of cases—viz., one in which there was some local cause for the trouble, and the other in which the most careful examination could detect no local cause. In the latter class the cause was nervous; and whether excision of the hymen would cure it was doubtful.

DR. MORE MADDEN, in reply, said the main features of his treatment in such cases were rest, dilatation, and nerve-stretching.

Case of Porro's Operation for Rupture of the Uterus.

DR. S. MASON read a paper on a case of rupture of the uterus, of which the following is an abstract:—On Nov. 5, 1886, a patient was admitted to the labour ward, Coombe Hospital, who had been in labour with her third child for more than three days. Her two previous labours had been difficult and tedious, the child in each case being still-born, though labour was completed by the natural efforts. A clear history could be obtained of the uterus having ruptured twenty-six hours before the patient's admission to hospital. On opening the abdomen the child was found lying directly behind the abdominal wall and was easily extracted by traction on the lower extremities; the placenta was in the right lumbar region, surrounded by blood and meconium, and the uterus

was situated posteriorly, small, and well contracted, and in its lower part was a tear extending completely through the cervix. The uterus was then removed, the pedicle formed by the cervix being secured by a Keith's clamp and a transfixion needle, the abdomen being closed by silk sutures. The patient rallied well after the operation, and seemed to be progressing favourably for about ten hours, when she suddenly commenced to vomit and died.

Post mortem.—Signs of recent and extensive peritonitis were found in the abdominal cavity. The portion of uterus enclosed in the clamp was torn through to the lower extremity of the anterior lip of the cervix. The bladder was uninjured. The pelvis was that described as the oblique pelvis of Nægelé, complicated by projection downwards and forwards of the last lumbar vertebra.

Dr. Smyly said the great difficulty with which Dr. Mason had had to contend was the poisoning either of the uterus or of the peritoneum. To his mind, the great objection to bringing the child back was that it rendered the cleansing of the uterus and perinæum impossible if either had become infected. There had been, in Dr. Mason's case, a considerable lapse of time since the accident had occurred, and the child had died; and the escape of gas from the abdomen proved that the uterus and peritoneum had been poisoned. Therefore practically, he believed, the case was a hopeless one, but the uterus might have been poisoned without the peritoneum becoming poisoned. Members were aware that Schrœder had performed Porro's operation in a different kind of case from the present—namely, in order to remove a uterus which had been infected by a portion of the placenta having been left in by the midwife, the doctor not having been sent for until a considerable time after delivery. In that case the portion of the placenta was found to be completely decomposed, and the operation saved the woman's life. Dr. Mason might have lost his patient by performing Sänger's operation instead of that of Porro.

The President observed that, so far as Porro's operation could be considered, in itself it seemed a very simple one. The indication for performing it seemed to be that such infection existed, that it would be a good thing that the woman should be made incapable of bearing children. On the other hand, if the peritoneum was not infected, Sänger's operation was to be preferred. It was also preferable, on the ground that it left the woman capable of bearing children; and as regarded the comparative mortality after the two operations respectively, it had been made by the new improvements, including those in Cæsarean section, almost the same. How to ascertain whether the uterus was infected or not was not a simple matter. In rupture of the uterus, where the child had been removed in tolerably quick time, the cases ought, generally speaking, to turn out tolerably well.

Dr. Mason, in reply, said the woman's pelvis was extremely small. The President had summed up the comparative advantages and disadvantages of Porro's and Sänger's operations. If any great time had elapsed after delivery, Porro's was the better; but where the rupture was very recent, the probabilities of recovery were greater with Sänger's operation.

The Section then adjourned.

PATHOLOGICAL SECTION.

President—Walter G. Smith, M.D.
Sectional Secretary—J. B. Story, M.D.

Friday, Jan. 14, 1887.

The President in the Chair.

Aspergillus Nigricans.

Mr. Story exhibited and described microscopic specimens of aspergillus nigricans, which he had removed from the auditory meatus of three individuals suffering from deafness and inflammation of the external ears. Mr. Greenwood Pim had seen two of the specimens and corroborated the diagnosis. Mr. Story exhibited also a fourth fungus of an undetermined character, but most probably also one of the aspergillus tribe. He gave a brief *résumé* of the literature of the subject of otomycosis, and stated his conviction that the fungi were the cause and not the consequence of the ear disease—a view which had been advocated by some of the writers on the subject.

The President said he had seen a few cases of aural fungi. One of these was that of a gentleman who consulted him about a year ago for very intense pain in the left ear. He found the meatus partly blocked up with a white cottony material. A brother of that gentleman was at the same time being attended by Mr. Swanzy for otomycosis, which was contracted by lying on hay or damp vegetable matter in the summer time, and he (the President) asked Mr. Swanzy to see his case. It was impossible to resist the evidence that the fungus was the direct cause of the disease. The invasion by it of the deeper tissues had been conclusively proved. He would ask Mr. Story whether, in any of his cases, he had noticed any special cause which led to the production of the fungus, such as dealing with yeast or any contact with vegetable decomposing matter. The aspergillus, he believed, was not confined to the ear, but was also occasionally found in the bronchial membranes.

Dr. Mapother mentioned that in the year 1880 he himself had an

acute attack of this otomycosis. He had never suffered, either before or since, from any aural disease. One night he went to bed in a house in the suburbs of Dublin with his hearing perfect; and the following morning he arose almost completely deaf. He bore the affection for one day, and on the next consulted Mr. Swanzy, who, partly by means of a forceps and partly by syringing, removed a quantity of white cottony material from his ears. Besides the deafness, the only sensations he had were stuffing and a sort of ramming, as if something like cotton wool was being pushed into both ears. The material removed from his ears was examined by himself and his friend, the late Dr. Richardson, and they both came to the conclusion that it contained aspergillus. Which of the seven or eight different forms it was he could not say; but as well as he remembered, it was like the first form described by Mr. Story. The growth was named from its resemblance to the aspergillus, or holy-water sprinkler used in the Roman Catholic Church. After the extraction of the fungi from his ears, and a week's washing with sulphurous acid lotion, they disappeared and never grew again. He had observed that the wall-paper of the room, next to which he slept, was extremely damp and almost completely separated from the wall by the dampness; and he believed that it was that which produced the fungi. Since the wall had become dry no similar attack of mycosis had occurred to any one else occupying the room.

Mr. Story, in reply, said he remembered having, as a patient suffering from this disease, a farmer who, after sitting up all night with a sick cow, had stuffing and pain in his ears next morning, which were found to be caused by aspergillus.

Dermoid Tumour growing from the Corneo-scleral Margin of the Left Eye.

Mr. Story exhibited a dermoid tumour growing from the corneo-scleral margin of the left eye of a middle-aged man. The tumour was of a pinkish-yellow colour, and had one long hair growing out of its centre. No other hairs could be detected, even with a magnifying glass. The tumour had existed ever since the man's birth, and remained quiescent until two months ago, when it began to grow over the surface of the cornea. It was a flat sessile growth, of a circular shape, about 4 min. in diameter, half corneal, half scleral. In his opinion it was to be regarded as a dermoid growth.

Œdema Glottidis.

Dr. Christopher Nixon exhibited the larynx and trachea of a patient who had died under his care of what it is the custom to call œdema glottidis, occurring in the course of Bright's disease.

Mr. Doyle, in commenting upon the communication, gave the clinical history of a case of Bright's disease which had been under his treatment.

The PRESIDENT observed that whether or not the disputed point was conceded that in Bright's disease the large smooth kidney might, in process of time, change to the small contracted kidney, there was no difficulty in assuming that other cases might occur in which that change did not happen. Whether it might happen or not, it need not happen. He would have no difficulty in accepting a history of any number of years' duration of Bright's disease, and yet in finding a large smooth kidney after death. He did not think any one maintained that the large smooth kidney necessarily turned into the small kidney. The point in dispute was whether the small kidney ever represented a large kidney which had undergone atrophic change. But that a large kidney might remain so for an indefinite time was no subject of wonder. Had there not been cases of a much longer duration of the disease than four years in which the *post mortem* showed a kidney of a large type?

DR. NIXON, in reply, said the point to which the President had referred was a very important one. He had adverted to the fact of the kidneys in this case remaining large and white for so long a time, notwithstanding that it was held by competent observers that the small red kidney was to be regarded as a stage or form of kidney in Bright's disease which all other forms of kidney in that disease had a tendency to assume. Starting with the idea that there was, first of all, a certain amount of inflammatory change which led to exudation, the next stage would be a proliferation of the connective tissue in the neighbourhood of that; and consequently the result should necessarily be the large white kidney passing into the atrophic form of the disease. There were two essentially distinct diseases—that is, if, as was the case in most instances, they had an atrophic change occurring in a large white kidney, it was quite a different process and different form of disease from primary atrophy of the kidney. For instance, if they examined a large white kidney which had undergone an atrophic stage they would find that it did not present the distinctly red granular appearance of the primarily sclerotic kidney. The cortical substance was not atrophied to the same extent, and they had not the same amount of connective tissue developed in it as in the primarily sclerotic kidney. The forms of Bright's disease of the kidneys which were usually met with were, first, the large white kidney; secondly, the atrophied condition of that large white kidney; thirdly, the primarily sclerotic kidney, or red granular kidney of Todd; and lastly, a fibroid condition of kidney which occurred as consequential to certain diseases of the genito-urinary tract, such as old prostatic disease, accompanied with stricture. The evidence did not show that the different forms of kidney that they met with in the disease in question, especially the red granular kidney, were stages of the one process. An important point alluded to by Wilkinson was that 40 per cent. of the cases of small red kidney had not been attended with dropsy;

whereas it had been proved by statistics that in 92 per cent. of the cases of large white kidney dropsy had been a prominent symptom. If the small red kidney were an advanced stage of the large white kidney, it had never been explained why it had passed the primary stage without the occurrence of dropsy. He thought the arguments were strongly in favour of the view that there were three primary forms of Bright's disease—viz., first, the large white kidney which, no doubt, in a certain proportion of cases, underwent atrophy; secondly, the primarily sclerotic kidney with a character of interstitial nephritis; and lastly, the form of nephritis that was consequential upon prostatic or urethral disease. As to Mr. Doyle's question, the specimen had been in spirit since the 6th of January, and now presented a much more shrivelled appearance than when it was originally examined.

The Section then adjourned.

BRITISH MEDICAL SERVICE.

THE following is a list of surgeons on probation in the Medical Department of the British Army who were successful at both the London and Netley Examinations. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows:—53rd Session, February 7th, 1887.—1. Morgan, F. J., 5,785; 2. Horrocks, W. H., 5,783 (gained the Herbert prize of £20, with the Montefiore Medal and prize of 20 guineas, and also the Martin Memorial Gold Medal); 3. Hale, C. H., 5,657; 4. Thurston, H. C., 5,476; 5. Scott, B. H., 5,316; 6. Poole, W. C., 5,261; 7. Julian, O. R. A., 5,058; 8. Raymond, G., 5,056; 9. Burnside, E. A., 5,032; 10. M'Culloch, T. C., 5,020; 11. Hinde, A. B., 4,951 (gained the Parkes Memorial Bronze Medal); 12. Reily, A. Y., 4,886; 13. Cockerill, J. W., 4,851; 14. Ritchie, J.; 4,796; 15. Hore, H. St. G., 4,795; 16. Macdonald, S., 4,741; 17. Corcoran, E., 4,679; 18. Watson, A. C., 4,628; 19. Gray, E. W., 4,621; 20. Stiell, D., 4,605; 21. Salmon, L. E. A., 4,552; 22. Wade, G. A., 4,519; 23. Minniece, J., 4,489; 24. Penton, R. H., 4,475; 25. Holt, M. P., 4,442; 26. Gray, W. L., 4,390; 27. Browne, E. G., 4,341; 28. Morgan, J. C., 4,262; 29. Pocock, H. J., 4,247; 30. Hilliard, G., 4,230; 31. Elliott, C. R., 4,193; 32. Young, C. A., 4,179; 33. Bullen, J. W., 4,150; 34. Weir, C. J., 4,140; 35. Inniss, B. J., 4,123; 36. Thacker, R. C., 4,112; 37. Murphy, W. N., 4,109; 38. Clark, S. F., 4,073; 39. Hassard, E. M., 4,039.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., B.A., Univ. Dubl.; F.K.Q.C.P.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, January 29, 1887.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Jan. 8.	Jan. 15.	Jan. 22.	Jan. 29.		Jan. 8.	Jan. 15.	Jan. 22.	Jan. 29.
Armagh -	15·5	10·3	25·8	5·2	Limerick -	31·0	37·8	37·8	39·1
Belfast -	24·9	30·2	23·2	27·6	Lisburn -	29·0	0·0	24·2	14·5
Cork -	25·3	27·9	30·5	22·7	Londonderry	41·0	33·9	33·9	35·7
Drogheda	38·1	25·4	33·8	21·1	Lurgan -	30·8	30·8	51·3	30·8
Dublin -	30·4	35·6	31·5	27·5	Newry -	28·1	31·6	24·6	17·6
Dundalk -	13·1	13·1	17·5	8·7	Sligo -	14·4	14·4	38·5	86·6
Galway -	30·3	20·2	16·8	26·9	Waterford -	25·5	48·6	30·1	27·8
Kilkenny	50·7	16·9	16·9	12·7	Wexford -	25·7	21·4	38·5	17·1

In the week ending Saturday, January 8, the mortality in twenty-eight large English towns, including London (in which the rate was 26·3), was equal to an average annual death-rate of 26·5 per 1,000 persons living. In Glasgow the rate was 35·0; and in Edinburgh it was 26·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 28·5 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in Waterford, Newry, Kilkenny, Drogheda, Dundalk, Sligo, Lisburn, and Armagh, to 17·8 in Londonderry. The 23 deaths from all causes registered in the last-named district comprise 9 from measles and 1 from diarrhœa. Among the 107 deaths from all causes registered in

Belfast are 1 each from scarlatina, typhus, ill-defined fever, and enteric fever; the 39 deaths in Cork comprise 1 from typhus and 1 from enteric fever; and the 23 deaths in Limerick comprise 1 from enteric fever and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 167—87 boys and 80 girls—and the deaths to 212—97 males and 115 females.

The deaths represent an annual rate of mortality of 31·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 30·4 per 1,000.

Sixteen deaths from zymotic diseases were registered, being 16 below the average for the first week of the last ten years, and 7 under the number for the week ended January 1; they comprise 6 from scarlet fever (scarlatina), 1 from simple-continued fever, 3 from enteric fever, 3 from diarrhœa, 1 from erysipelas, &c.

Sixteen cases of scarlatina were admitted to hospital, being 12 under the admissions for the preceding week; 22 scarlatina patients were discharged, 1 died, and 129 remained under treatment on Saturday, being 7 under the number in hospital on Saturday, January 1.

Eight cases of enteric fever were admitted to hospital, being a decline of 2 as compared with the admissions for the preceding week; 8 patients were discharged during the week, 2 died, and 36 remained under treatment on Saturday, being 2 under the number in hospital on that day week.

There was but 2 cases of typhus admitted to hospital, being 2 under the admissions for the preceding week; 2 patients were discharged, and 10 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

Fifty-seven deaths from diseases of the respiratory system were registered, being 4 over the number for the preceding week, but 2 under the average for the first week of the last ten years; they comprise 49 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, January 15, the mortality in twenty-eight large English towns, including London (in which the rate was 23·0), was equal to an average annual death-rate of 24·1 per 1,000 persons living. In Glasgow the rate was 30·9; and in Edinburgh it was 20·7.

The average annual death-rate in the sixteen principal town districts of Ireland was 31·6 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·3 per 1,000, the rates varying from 0·0 in ten of the districts to 8·9 in Londonderry—the 19 deaths from

all causes registered in that district comprising 4 more from measles and 1 from enteric fever. The 130 deaths from all causes registered in Belfast comprise 1 from scarlatina, 2 from typhus, 2 from enteric fever. and 3 from diarrhœa. Among the 28 deaths in Limerick are 1 from scarlatina and 1 from whooping-cough; and the 3 deaths in Dundalk comprise 2 from diphtheria.

In the Dublin Registration District the births registered during the week amounted to 202—116 boys and 86 girls—and the deaths to 245—103 males and 142 females.

The deaths represent an annual rate of mortality of 36·2 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 35·6 per 1,000.

Twenty-three deaths from zymotic diseases were registered, being 7 over the number for the preceding week, but 11 below the average for the second week of the last ten years; they comprise 8 from scarlet fever (scarlatina), 2 from whooping-cough, 1 from cerebro-spinal fever, 3 from simple-continued or ill-defined fever, 1 from enteric fever, 7 from diarrhœa, &c.

Seventeen cases of scarlatina were admitted to hospital, being 1 over the admissions for the preceding week, but 11 under the number for the week ended January 1; 28 scarlatina patients were discharged during the week; 1 died; and 117 remained under treatment on Saturday, being 12 under the number in hospital at the close of the preceding week.

There was but one case of enteric fever admitted to hospital, being 7 under the admissions for the preceding week; 11 patients were discharged during the week; and 26 remained under treatment on Saturday, being 10 under the number in hospital on Saturday, January 8.

Five cases of typhus were admitted to hospital, against 2 admissions in the preceding week; 2 patients were discharged and 13 remained under treatment at the close, being 3 over the number in hospital on the previous Saturday.

Sixty-five deaths from diseases of the respiratory system were registered, being 8 over the average for the corresponding week of the last ten years, and also 8 in excess of the number for the week ended January 8; they comprise 47 from from bronchitis, 8 from pneumonia or inflammation of the lungs, and 4 from croup.

In the week ending Saturday, January 22, the mortality in twenty-eight large English towns, including London (in which the rate was 21·8), was equal to an average annual death-rate of 22·8 per 1,000 persons living. In Glasgow the rate was 27·7; and in Edinburgh it was 23·1.

The average annual death-rate represented by the deaths registered

last week in the sixteen principal town districts of Ireland was 29·1 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in ten of the districts to 16·0 in Londonderry—the 19 deaths from all causes tabulated for that district comprising 9 more from measles. Among the 100 deaths from all causes registered in Belfast are 2 from scarlatina, 3 from whooping-cough, and 3 from diarrhœa. The 4 deaths in Dundalk comprise 1 from enteric fever.

In the Dublin Registration District the births registered during the week amounted to 219—119 boys and 100 girls—and the deaths to 218—101 males and 117 females.

The deaths represent an annual rate of mortality of 32·2 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 31·5 per 1,000.

There were but 15 deaths from zymotic diseases registered, being 19 below the average for the corresponding week of the last ten years, and 8 under the number for the week ended January 15; they comprise 4 from scarlet fever (scarlatina), 1 from whooping-cough, 1 from diphtheria, 1 from ill-defined fever, 6 from diarrhœa, &c.

Nineteen cases of scarlatina were admitted to hospital, being 2 over the admissions for the preceding week; 23 scarlatina patients were discharged, 1 died, and 112 remained under treatment on Saturday, being 5 under the number in hospital on Saturday, January 15.

Six cases of typhus fever were admitted to hospital, being 1 in excess of the admissions for the preceding week; and 19 cases remained under treatment on Saturday, being 6 over the number in hospital at the close of the preceding week.

Four cases of enteric fever were admitted to hospital, against 1 in the preceding week; 8 patients were discharged, and 22 remained under treatment on Saturday, being 4 under the number in hospital on Saturday, January 15.

The number of deaths from diseases of the respiratory system registered is 51, being 14 under the number for the preceding week, and 7 below the average for the third week of the last ten years; 41 of the 51 deaths were caused by bronchitis, and 6 by pneumonia or inflammation of the lungs.

In the week ending Saturday, January 29, the mortality in twenty-eight large English towns, including London (in which the rate was 19·7), was equal to an average annual death-rate of 21·1 per 1,000 persons living. In Glasgow the rate was 29·7; and in Edinburgh it was 18·7.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·6 per 1,000, the rates varying from 0·0 in Waterford, Galway, Wexford, Dundalk, Lisburn, Lurgan, and Armagh to 10·7 in Londonderry—the 20 deaths from all causes registered in that district comprising 5 more from measles and 1 from diphtheria. Among the 119 deaths from all causes registered in Belfast are 1 from measles, 1 from typhus, 1 from diphtheria, 2 from simple continued fever, 4 from enteric fever, and 5 from diarrhœa. The 35 deaths in Cork comprise 1 from diphtheria, 1 from enteric fever and 2 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 181—95 boys and 86 girls—and the deaths to 191—92 males and 99 females.

The deaths represent an annual rate of mortality of 28·2 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·5 per 1,000.

Fifteen deaths from zymotic diseases were registered, being equal to the number for the preceding week, but 19 below the average for the fourth week of the last ten years; they comprise 6 from scarlet fever (scarlatina), 1 from typhus, 4 from whooping-cough, 1 from ill-defined fever, 2 from enteric fever, &c.

Sixteen cases of scarlatina were admitted to hospital during the week, being 3 under the admissions for the preceding week; 22 scarlatina patients were discharged, and 106 remained under treatment on Saturday, being 6 below the number in hospital on Saturday, January 22.

Seven cases of typhus were admitted to hospital, against 6 admissions in the preceding week; 5 patients were discharged, 2 died, and 19 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

Seven cases of enteric fever were admitted to hospital, being 3 over the admissions for the preceding week; 5 patients were discharged, and 24 remained under treatment on Saturday, being 2 over the number in hospital on Saturday, January 22.

Forty-nine deaths from diseases of the respiratory system were registered, being 18 below the average for the corresponding week of the last ten years, and 2 under the number for the third week of this year; they comprise 36 from bronchitis and 6 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N.; Long. 6° 15′ W., for the Month of January, 1887.

Mean Height of Barometer, - - -	29·896 inches.
Maximal Height of Barometer (on 21st, at 9 a.m.),	30·623 ,,
Minimal Height of Barometer (on 5th, at 9 p.m.),	28·852 ,,
Mean Dry-bulb Temperature, - - -	41·0°.
Mean Wet-bulb Temperature, - - -	39·2°.
Mean Dew-point Temperature, - - -	37·0°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·224 inch.
Mean Humidity, - - - - -	86·1 per cent.
Highest Temperature in Shade (on 26th), - -	57·4°.
Lowest Temperature in Shade (on 10th), - -	23·1°.
Lowest Temperature on Grass (Radiation) (on 10th),	18·0°.
Mean Amount of Cloud, - - - -	62·5 per cent.
Rainfall (on 16 days), - - - -	1·816 inches.
Greatest Daily Rainfall (on 10th), - -	·440 inch.
General Directions of Wind, - - -	S.W., W.

Remarks.

Cold, changeable, and inclement until the 19th, the weather was afterwards singularly mild and fine—at all events in the east of Ireland. The winds blew freshly from points between W. and S., while scarcely any rain fell near Dublin for a period of ten days, and the mean temperature of the week ending Saturday, the 29th, was in the city as much as 9° above the average. In the west of Ireland the southerly winds blew strongly, often with the force of a gale, and rain fell frequently. The warm weather after the 20th raised the mean temperature of the whole month to the average.

In Dublin the mean temperature (41·5°) was almost precisely the average (41·4°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 41·0°. In the twenty-two years ending with 1886, January was coldest in 1881 (M. T. = 33·2°) and warmest in 1875 (M. T. = 46·6°). In 1867, the M. T. was 35·7°, and in 1865 it was 37·8°. In 1871 and in 1886, the M. T. was 37·9°; in the year 1879 (the cold year) it was 35·3°. As a general rule, January in Dublin is not colder, but rather a shade warmer, than December. This is owing to the full development in January of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity.

The mean height of the barometer was 29·896 inches, or 0·015 inch above the average value for January—namely, 29·881 inches. The mercury rose to 30·623 inches at 9 a.m. of the 21st, and fell to 28·852

inches at 9 p.m. of the 5th. The observed range of atmospherical pressure was, therefore, as much as 1·771 inches—that is, a little over one inch and three-quarters. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 41·0°, or 3·8° above the value for December, 1886; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 40·7°, or only 0·1° below the average mean temperature for January, calculated in the same way, in the twenty years, 1865–84, inclusive (40·8°). The arithmetical mean of the maximal and minimal readings was 41·5°, compared with a twenty years' average of 41·4°. On the 26th the thermometer in the screen rose to 57·4°—wind S.S.W.; on the 10th the temperature fell to 23·1°—wind calm. The minimum on the grass was 18·0° on the same date. The rainfall was 1·816 inches, distributed over 16 days. The average rainfall for January in the twenty years, 1865–84, inclusive, was 2·243 inches, and the average number of rainy days was 17·1. The rainfall and the rainy days, therefore, were both perceptibly below the average. In 1877 the rainfall in January was very large—4·322 inches on 25 days; in 1869 also 4·258 inches fell—on, however, only 18 days. On the other hand, in 1876, only ·406 of an inch was measured on but 9 days; and in 1880, the rainfall was only ·563 of an inch on but 8 days. In January, 1886, 3·244 inches of rain were measured on as many as 26 days.

A solar halo was seen on the 10th, and a lunar halo on the 2nd. The atmosphere was foggy on the 7th, 10th, 14th, and 18th. High winds were noted on 13 days, reaching the force of a gale on two days, the 11th and 31st. Hail fell on the 3rd and 7th, and snow or sleet on the 4th, 6th, 7th, 9th, and 16th.

At the beginning, a band of high atmospherical pressure stretched from N.E. to S.W. from the Baltic to England. South-westerly winds and mild weather prevailed along the Atlantic coasts of Ireland, Scotland, and Norway, while sharp frost held in England—at 8 a.m. of the 1st the thermometer stood at 22° in London, 17° at Loughborough, in Leicestershire; 15° at Oxford, and 14° at Cambridge. At 9 a.m. it read 37° in Dublin, but at 8 a.m. it was 48° at Valentia Island. During New Year's Day, temperature did not rise above 21° at Oxford.

In the course of the week ending Saturday, 8th, cyclonic conditions prevailed. On Sunday, the 2nd, the cold was very sharp, except in the N.W., where thermometrical readings were 20° to 25° higher than those over the S.E. of England. After the 4th, the barometer remained very low over the British Islands for several days—in fact, values were below 29 inches over a large area for 60 hours or upwards. This low pressure was accompanied by dull, cold, unsettled weather, fitful changes of temperature, showers of rain and sleet or snow, and a complete cyclonic

circulation of moderate winds. On the evening of the 7th snow fell heavily in Dublin—the snowstorm being succeeded by sharp frost.

The weather of the second week (ending Saturday, 15th) was again unsettled and unusually cold. At the commencement sharp frost held in and about Dublin, where the thermometer read 24° at 9 a.m of the 10th. During this day, however, a rapid thaw set in, temperature rising at night to 50·9°, with a southerly gale and heavy rain (·440 inch—the maximal downpour of the month). During the remainder of the week, the weather was influenced by two systems of high pressure. Of these the first came in from the Atlantic on the 11th, and travelled quickly eastwards. In Dublin the barometer rose nearly an inch in the 24 hours ending 9 a.m. of the 12th. Frost set in for a short time. Another high pressure area advanced from the westward on the 14th, but it too proved short-lived.

In the third week (16th–22nd) a fitful but decided rise of temperature was in progress—particularly in Ireland and Scotland. On Sunday, a cold undercurrent of air from S.E. prevailed, and in Dublin a light fall of snow occurred in the afternoon. Next morning a cyclonic system was found off the N.W. of Ireland, and temperature was rising, with squally S. to S.W. winds. At 8 a.m. extraordinary differences in temperature were reported, readings varying from 49° at Valentia, in Kerry, to 20° in London, 19° at Oxford and Cambridge, and 15° at Loughborough. These last-named temperatures represented the last severe frost experienced during the month in Great Britain.

Throughout the fourth week, atmospherical pressure was highest in an anticyclone, the centre of which lay permanently over France and Germany, and lowest over Finland, Lapland, and off the N. and N.W. coasts of the British Isles. Over the Continent the weather was continuously very cold, foggy, or hazy. In England the fogs occasionally cleared and temperature rose and fell alternately, while the sky was brilliantly clear at times. In the east of Ireland remarkably fine, mild weather prevailed—the mean temperature in Dublin being no less than 9° above the average, and the week being practically rainless; in the west of Ireland, however, the weather was unsettled, with cloudy skies, squally S. to W. winds, and frequent rains.

During the last two days the fine weather broke up, and on the 31st there was a south-westerly gale.

On the whole, January, 1887, was cold on the Continent and over the greater part of England, mild in Ireland, Scotland, and Norway.

PERISCOPE.

THE MORTALITY AMONG THE TROOPS IN THE UNITED KINGDOM FROM CONSUMPTION.

A PAPER on this important subject was read before the Statistical Society of London on January 18, 1887, by Robert Lawson, LL.D., Inspector-General of Hospitals. The periods embraced were from 1837 to 1846, and from 1860 to 1884, there having been no returns from 1847 to 1858. The author stated that in prosecuting this inquiry the first step was to ascertain the frequency of deaths from consumption among the adult male population of the country, at military ages, which, collated with the corresponding facts for the troops for the same periods, would indicate how far the variations of the disease among the latter might be referred to a different incidence of its causes on the country at large, and how far they were referable to influences to which soldiers were exposed and which did not affect the civil population. In addition to those who die in the service, there are many more discharged with the disease in an active state, of whom a large number die in a few years; these have to be added to the deaths in the service, to show the real amount of the consumption originating in it. These deaths have been estimated at half those discharged—a proportion which, considering they incur the same risk of dying as a similar number of consumptives of the same ages in civil life, whose complaints are equally advanced, does not seem too great. The mortality from phthisis among the civil male population in England and Wales, between the ages of 15 and 45, was, in 1838–42, 4·97 per 1,000 living; in 1860–64 this had fallen to 3·60; in 1865–69 it rose to 3·73, from which it had declined to 3·23 per 1,000 in 1875–79, and to 2·81 in 1880–84. With the different distribution of age among the troops the mortality at civil rates would have been in 1837–46, 5·09 per 1,000; in 1860–64, 3·63; in 1865–69, 3·81; in 1875–79, 3·21; and finally in 1880–84, 2·70 per 1,000. These two sets of ratios differ but little from each other, but the actual mortality among the troops (including half the numbers discharged for phthisis) was very much greater, the ratio per 1,000 in 1837–46, having been 9·38; in 1860–64, 5·77; in 1865–69, 4·83; in 1875–76, 4·67; and in 1880–84, 3·63. In explanation of this great discrepancy it is to be observed that, in 1837–46, 83 per cent. of the consumptive cases were retained in the service until they terminated fatally, and only 17 per cent. discharged; while in 1860–64 and onwards, about 36 per cent. only were retained until death, and 64 per cent. discharged; the freedom and relaxation of

civil life being more favourable for recovery than the unavoidable restrictions of the service. In addition, up to 1855, most of the troops at home were quartered in permanent buildings, in or in the immediate vicinity of large towns. The camps at Aldershot, Shorncliffe, Colchester, and the Curragh, in healthy country localities, were then established, in which, in 1860–64, 27 per cent. of the troops were accommodated. But for these changes the mortality from consumption in 1860–64 would have been at least 7·58 per 1,000, instead of 5·77, thus showing a reduction of 1·80 only from 1837–46 for men under the same condition as to barrack accommodation at both dates, instead of 3·61 as would appear from the actual difference of the ratios. There is a very general belief that the great reduction of consumption in the army was due to improved ventilation in barracks; this was commenced in 1859, and was pretty generally introduced in 1862, and should immediately have begun to show its effects. The mortality from consumption in 1860–62, however, was 5·80 per 1,000, and that of 1864 5·56, a reduction of 0·24 only after two years' full operation of the ventilation; while in 1865 the ratio was 4·84, a fall three times as great, which followed the substitution of flannel for linen or calico shirts in 1864; and this low ratio continued with little alteration for the next fifteen years. Up to 1823 the troops wore cloth trousers in summer. That year white linen was introduced instead, which were often put on damp, and without any underclothing. In 1846 a light woollen material was introduced in place of the linen. So far as the records enable an opinion to be formed, the introduction of the linen was followed by a large increase of deaths from consumption, and the substitution of woollen material in 1846 was followed by an equally remarkable reduction. The reduction of the death-rate from consumption in 1880–84 is a very striking one, and is equally remarkable in civil life as in the army. In the former the death-rate from all causes (among males of the ages already specified) was 9·74 per 1,000 in 1870–74, and it fell to 8·11 in 1880–84, the consumption forming about 35 per cent. of the total death-rate each quinquenniad. Among the troops in 1865–69, the death-rate from all causes was 9·41 per 1,000, and in 1880–84 it had fallen 7·25, the consumption forming about 44 per cent. of it each successive quinquenniad. It would thus appear that the causes chiefly concerned in reducing consumption, lately at least, are such as improve the general health. A discussion followed, in which the undermentioned took part:—Dr. G. B. Longstaff, Captain Douglas Galton, R.E., C.B., &c.; Surgeon-General Marston, Dr. W. H. Lloyd, R.N.; Dr. W. Dickson, R.N.; and the Chairman, Sir Robert W. Rawson, K.C.M.G., C.B., a past President of the Society.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XVI.—*On Cocaïn.*[a] By HENRY BURDEN, M.A., M.D., M.R.C.S., Eng., M.R.I.A.; Pathologist to the Belfast Royal Hospital, &c.

[It is due to Dr. Thudichum that, for facts and figures in the succeeding essay, I should acknowledge my great indebtedness to his work on "The Coca of Peru."]

WHEN some three years ago it was announced that the General Council of Medical Education and Registration were about to publish a new edition of the Pharmacopœia there were few of us who did not look forward with considerable interest to the advent of the work. When it did appear many and various were the comments with which it was greeted. I have my own opinions on this subject, yet it is far from my present intention to criticise either favourably or adversely the judgment displayed in the selection of a new series of medicines by the learned body to whom the compilation of the work was entrusted; I would, however, venture to state my conviction that on the whole a wise discrimination has been exercised, and that, with few exceptions, the remedies that have now for the first time been admitted within the pages of our chief authority are of great value, and have satisfactorily responded to the crucial test of extensive practical experience. The most interesting, and by no means the least important, of these remedial agents are the leaves of the Coca plant, and the active principles obtained from them. The term Coca is

[a] Read before the Ulster Medical Society, on Wednesday, 22nd Dec., 1886.

an unfortunate one, since two other well-known plants, in no way related to it, are popularly designated by very similar names. The Coca plant is connected by family ties with neither the Cocoa-nut palm nor the tree that yields the refreshing beverage and delightful sweetmeat with which we have been so long familiar.

To obviate the inconveniences that might arise from these widely different plants, or their products, being confounded, the editors of the United States Pharmacopœia have adopted the distinctive, though somewhat cumbrous, word Erythroxylon, and in our own Pharmacopœia the alternative designation Cuca is added.

It is said that the latter term represents the pronunciation in the native language more accurately than Coca. The Coca plant is the Erythroxylon Coca of botanists, and is a member of the natural family of Erythroxylaceæ, a family nearly related to, and by some included in, the family Malpighiaceæ. The first scientific examination and description of it were probably made by Antoine Laurent de Jussieu. It is a small shrub from two to eight feet high, and resembles in its general aspect a black-thorn, being—like the latter—covered with small white blossoms and bright green leaves.

It is bushy, and much branched. The stem and branches are encased in a purplish brown wrinkled bark. The young twigs are smooth. Its leaves are closely placed, alternate, shortly stalked, one or two inches long, lanceolate or oval, usually blunt and emarginate, with a small apiculus in the notch at the apex, entire, deciduous, thin, bright green above, paler and glaucous beneath, smooth, glabrous, with prominent midrib; lateral veins numerous, faintly visible, freely anastomosing. On either side of the midrib a well-defined curved and raised line less than midway between it and the margin extends from the base to the apex of the leaf. The flowers are small, and of a pale yellow colour (almost white), supported upon slender, drooping, short, sharply angled stalks. The calyx is deeply cut into five triangular acute segments. Petals, five in number, alternating with the calyx lobes, of a pale yellow colour. Stamens, ten, hypogynous, equal, longer than the petals, united at the base into a short fleshy tube. Fruit, a small indehiscent drupe, less than half an inch long, ovoid, pointed, smooth, scarlet.

The Coca plant grows on the western side of tropical South America, chiefly on the Andes of Peru, Bolivia, and Columbia. Here it begins to flourish at an elevation of 2,000 feet above the sea,

and is met with from that level up to about 5,000 feet. It prospers best in a mild moist climate, where the thermometer does not often fall below 60° F. Night frosts kill it, and, on the other hand, it does not thrive under the tropical heat of the plains. It is believed to be truly indigenous in the neighbourhood of Cuchero and the summit of the Cerro de San Cristobal.

The Coca plant is now extensively cultivated both in Peru and in Bolivia; in Peru chiefly north of Lima, and more especially in the provinces of Huanuco and Guamalies. The Coca of Huanuco has acquired a high reputation, and is much sought after. But the quantity produced by Bolivia far exceeds what is obtained from Peru. Thus it was calculated many years ago that Bolivia yielded annually 400,000 baskets, weighing one arroba each. In the town of La Paz, the centre of the Coca trade in Bolivia, the basket was then worth about six Spanish dollars, so that the value of the produce amounted to 2,400,000 Spanish dollars per annum. It was at the same time estimated that the annual value of the Coca of Peru exceeded 391,000 Spanish dollars. The joint value of the produce of Peru and Bolivia was, therefore, more than two and three quarter millions of Spanish dollars. A more recent estimate raises the annual consumption of the leaf to fifteen millions of kilogrammes, representing a value of nearly 40 millions of francs. A plantation is prepared in the following manner:—The jungle or the primeval forest is cut down and burned in the usual way. The berries are carefully selected, those of a dark scarlet colour being preferred. They are then thrown into water, and those only that sink are used. In November square pits are made in the ground, and into each of these a handful of berries is thrown; but they are left uncovered by the soil, otherwise they would be liable to become rotten. After they have sprouted the young plants are allowed to remain in the original pits for about fourteen months, and then, usually in February, they are transplanted into rows of square pits, which are at first not filled up, but into which, in the third year, earth is thrown, until it rises to a level with the adjoining soil. Such a plantation is called a Cocal. The ground must be carefully drained, and requires constant weeding. One weed in particular, a fern, the Pteris arachnoidea, grows to a great height, exhausts the soil, and is eradicated with the greatest difficulty. The Coca plant grows best on slightly inclined land, free from stones. Limestone districts are unfavourable to its growth, and on wet soil the plant soon dies, in consequence of the

rotting of its roots. The first harvest may be taken in from the second to the fifth year from the time of planting, according to the quality of the soil. A full grown bush yields a crop every thirteen or fourteen weeks, but owing to the individual plants arriving at maturity at different periods the collection of the leaves is, in a large plantation, carried on all the year round. The leaves are preferably plucked off one by one, and are then spread out and dried in the sunshine, or, in some plantations, in kilns, the temperature of which should not exceed 95° F. When they are dried in the sunshine they are laid on a hardened clay or stone platform specially prepared for the purpose. The Coca that can be dried in one day (Coca del dia) is the best, and fetches the highest price, but rainy or cloudy weather often retards the process.

According to a statement of Poeppig—"Large heaps of the freshly dried leaves, particularly when the warm rays of the sun are upon them, diffuse a very strong smell resembling that of hay in which there is a quantity of Melilot. The natives never permit strangers to sleep near them, as they would suffer from severe headache in consequence." For transport the dried leaves are usually packed in coarse sacks, in which they are compressed by stamping with the feet, and the closed sacks are then rolled into a cylindrical form, and called Tercios, each weighing about 80 pounds. Every possible precaution is taken to prevent the packages from becoming damp. Thus while they are in the store they are enveloped in woollen carpets, and during their transit from the plantation to the market or elsewhere they are covered, at night, with carpets or rugs. Were these measures omitted the leaves would lose much of their peculiar properties, and be proportionally reduced in value.

Coca farming yields large profits, for it is said that in six or seven years the capital expended on the establishment of a Cocal is repaid, and that afterwards a clear annual profit, amounting to 45 per cent. of the money originally invested, may be confidently anticipated. The failure of a crop, or the sudden depreciation of its marketable value, are calamities unknown to the planter.

In the foregoing details, which I trust have not been devoid of interest, I have attempted to indicate the magnitude and importance of the trade that formerly was, and still continues to be, carried on in this remarkable natural production. Let me now turn to the early history and the uses of the plant. When at the beginning of the sixteenth century the Spanish invaders of Peru had subdued the last of the native princes, the Incas, and began to employ

Indians to work their mines, they discovered that the latter were in the habit of chewing Coca leaves. The object of this practice they at first could not comprehend, nor, when an explanation was given, did they credit the wonderful virtues that were attributed to the plant. They, however, soon learned by experience that its effects were not merely the result of a highly-wrought imagination, as many persons had vehemently asserted, but that its use did in reality enable the miners to pursue their laborious occupation with comparative ease. They found, indeed, that were their workmen deprived of this necessary condiment, they could not be induced to exert themselves at all. Many Spanish owners of mines, consequently, began to cultivate the plant for the benefit of their employés. The price of Coca being high, and hired labour scarce, they compelled the Indians to work in the Cocals without pay. Many of the latter, having been brought for this purpose from the higher Andes, died under the combined influence of the hot climate and the severe labour. Numerous royal ordinances were then successively issued, forbidding the forced employment of the natives at this occupation. The following extract from one of these edicts exemplifies the incredulity with which the alleged efficacy of the plant was received in high quarters:—"This," says the ordinance, "is only heresy and witchwork, seems to strengthen only by deception of the devil, as say all experienced persons, and possesses no true virtue, but demands the lives of a great number of Indians, who in the best case escape from the forests with their health destroyed, but can by no means be coerced to do this labour, though their lives ought to be preserved, and their strength husbanded." These orders, I regret to add, were for the most part disregarded.

With the exception of those who dwell on or near the coast, there are few native Peruvians of the lower class who do not consume Coca. The manner in which they do this is somewhat similar to that in which the inhabitants of the East Indian Archipelago use the Betel-nut. Let me, then, digress for a few moments to describe as briefly as possible the practice of Betel-chewing.

The Areca Catechu, a species of palm, produces a fruit containing a seed about the size of, and mottled internally like, a nutmeg. This is known under the name Areca-nut, Pinang, and Betel-nut. The nuts are cut into narrow pieces, which are rolled up with quicklime in the leaves of the Betel pepper (Chavica Betel). These pellets on being chewed impart a hot and acrid sensation to

the tongue, tinge the saliva red, and produce a kind of intoxication. Blume says that the natives would rather forego food and drink than their favourite Areca-nut.

By the Peruvians the Coca leaves are carried in a bag, and are as far as possible preserved unbroken, the broken leaves being thought inferior in quality and the dust deemed useless. An indispensable accompaniment to the stock of leaves is a small calabash, into the stopper of which a metal or wooden needle is inserted, and which itself contains freshly-burnt and finely powdered quicklime or the alkaline ashes of various plants. The leaves are first chewed and well moistened with saliva; then the needle is damped, dipped into the lime powder, drawn through the mouth, and brought in contact with the leaves, care being of course taken not to touch the lips with the caustic lime. The effect produced by the addition of lime, though this was an inscrutable mystery to both natives and Spaniards, obviously is the liberation of the alkaloid contained in the leaves from its combination with another substance of which I shall make mention hereafter. The saliva, which is tinged green by the juice of the leaf, is swallowed, but the leaf itself is finally rejected from the mouth. An Indian is said to consume in the way I have described from one to one and a-half ounces daily. In some places the leaves are treated in a manner different from this. They are reduced to a coarse powder and mixed with tapioca, the ashes of Cecropia, and the juice of sugar cane. The mixture is called Ipadu, and is probably swallowed without chewing or is infused in hot water. The native Peruvian is passionately fond of Coca, and would, it is asserted, prefer to be deprived of his ordinary food rather than of it. To enjoy it thoroughly he must obtain complete repose of mind and body.

Travellers either by land or river are obliged to halt three or four times daily to allow their native escort an opportunity for indulging in this indispensable luxury. A man who consumes the leaf to excess is designated a Coquero, and his desire for it has been compared to ravenous hunger. It must, however, be admitted that a great deal of romance has been imported into the subject by travellers and authors. The following extracts from the writings of Edward Poeppig, Professor of Botany in Leipsig, reminds one of Homer's description of the Lotophagi. Poeppig writes:—"Useless for every active pursuit of life, the slave of his passion even more than the drunkard, he exposes himself to the greatest danger for the sake of gratifying this propensity. As the stimulus of the Coca

is most fully developed when the body is exhausted with toil, or the mind with conversation, the poor victim then hastens to some retreat in a gloomy native wood, and flinging himself under a tree remains stretched out there heedless of night or of storms, unprotected by covering or fire, unconscious of the floods of rain and of the tremendous winds which sweep the forest; and after yielding himself for two or three entire days to the occupation of chewing Coca, returns home to his abode with trembling limbs and a pallid countenance. . . . Many instances were related to us in Peru where young people of the best families, by occasionally visiting the forests, have begun using the Coca for the sake of passing the time away, and, having acquired a relish for it, have from that period been lost to civilisation. As if seized by some malevolent instinct, they refuse to return to their homes, and, resisting the entreaties of their friends, who occasionally discover the haunts of these unhappy fugitives, either retire to some more distant solitude, or take the first opportunity of escaping when they have been brought back to the towns."

Let me now quote Homer's description of the Lotus-eaters. It runs thus:—"Then I sent forth my comrades, selecting two men and adding a third as herald, that going they might learn what manner of men they were who ate the produce of the land. And they, forthwith going, mingled with the Lotus-eating men; nor verily did the Lotophagi plan destruction for our comrades, but they gave them the Lotus to taste. But whoever of them ate the honey-sweet fruit of the Lotus was no longer willing to bring back news or to depart, but they preferred to remain there with the Lotus-eating men, feeding on Lotus. Them, indeed, I brought weeping to the ships by force, and dragging them into the hollow ships I bound them under the benches; but I bade my other trusty comrades hasten to ascend the swift ships, lest perchance any of them eating the Lotus might forget their return."

On comparing the foregoing quotations, Poeppig's graphic statement appears even less credible than Homer's highly poetical picture.

It is, perhaps, a coincidence worth mentioning in this connection that, according the botanist Munby, the true Lotus tree of the ancients is the Nitraria tridentata, a species of the family Malpighiaceæ, so closely allied to the family Erythroxylaceæ, to which the Coca belongs, that, as I have already stated, the latter family is by some botanists included in the former. Nitraria tridentata

is found in the desert of Soussa, near Tunis, and bears a succulent fruit, having stimulating qualities. Though there can be but little doubt that Poeppig lent a too credulous ear to the tales that were related to him, nevertheless we have the testimony of many observers that the prolonged or excessive use of Coca tends to undermine both the bodily and the mental powers, and to induce a train of diseased conditions that ultimately cuts life short. The physiological effects that have until lately been ascribed to Coca by travellers and others were often fanciful, for the most part conflicting, and always vague. Thus, by some it has been called a narcotic, and said to resemble opium in its action on the human organism; by some it has been described as a stimulant, and classed with alcoholic liquids; while others have assigned to it a position among sedatives, such as tobacco. All, however, have agreed in granting to it one cardinal virtue—namely, that its use enabled the consumer to sustain an amount of continuous physical exertion that would have been unendurable without its aid. It was also observed that it alleviated the respiratory distress which affects those who are ascending lofty mountains, that it mitigated the pangs of hunger, and that men could, under its influence, continue to work hard without ordinary food for many days.

The effects of Coca on the healthy organism appear to have been studied, and advantage taken of its peculiar properties in the treatment of disease, at an earlier period in the United States of America and on the Continent than in Great Britain. We are, moreover, indebted to our Continental neighbours for the first accurate analysis of the leaves.

Mantegazza, some twenty-five years ago, published at Milan a prize essay "On the Dietetic and Medicinal Properties of Erythroxylon Coca." He experimented on himself, with the following results:—Chewing produced some erythema and prickling of the skin. An infusion caused increase in the number of beats of the pulse. An infusion of three drachms produced a feverish condition, heat of skin, seeing of flashes, headache, and vertigo, a rise in the pulse from 70 to 134, a peculiar roaring noise in the ears, a desire to run about at large, and an apparent enlargement of the intellectual horizon, a feeling of increased strength, agility, and impulse; sensibility seemed hardly influenced. Four drachms increased the effect, and produced inclination for gymnastic exercise; later on came torpidity and desire to sleep. He took infusion of 18 drachms in one day, which produced some agreeable delirium.

The last effects he terms delirium, hallucination, and congestion of the brain. The late Sir Robert Christison has also recorded the effects of Coca upon himself. He found that it enabled him to undertake the ascent of mountains and to fast for many hours without feeling the usual fatigue or hunger. Though it did not prevent his taking food or produce any distaste for it, he was able, under its influence, to fast and accomplish hard work without inconvenience, and even with a sense of satisfaction and comfort. It is now fully ten years since I induced a young friend, who was an ardent bicyclist, to use the leaf before he set out for a long journey on his bicycle. He reported favourably on the result of his experiment.

There has also been, from time to time, a considerable amount of what, for want of a better epithet, I must call amateur experimentation. For instance, I have heard of Oxford and other students chewing and drinking infusions of the leaf, with a view to brighten their intellects, and to enable them to persevere for a lengthened period in their mental labours; in all likelihood, without much success, for in the chewing process I am sure they never thought of adding lime, and their infusions were probably too weak to produce any marked effect.

Up to this stage I have dealt with my theme from a point of view for the most part historical. I would now ask you to hear from me a brief abstract of what the more extended researches of recent years have revealed, with respect to the chemical nature and relations, the physiological effects, and the therapeutical applications of the plant and its derivatives. In the year 1855 Gardeke isolated from the leaves an alkaloid, which he named Erythroxylin. Five years afterwards Niemann subjected the leaves to a careful analysis, and, obtaining the same alkaloid, re-christened it, conferring on it the more convenient, if less distinctive, title Cocaïn. Wöhler assigned to it the composition expressed by the symbols $C_{16}H_{20}NO_4$, but this formula was afterwards rejected by Lassen, who adopted the expression $C_{17}H_{21}NO_4$. The correctness of the latter formula is confirmed by the compounds into which it breaks up on subjecting it to the action of concentrated hydrochloric acid in a closed tube.

The following equation shows the rearrangement of the chemical elements that occurs under these circumstances :—

Cocaïn	Water	Ecgonin	Benzoic Acid	Methylic Alcohol

$$C_{17}H_{21}NO_4 + 2\ H_2O = C_9H_{15}NO_3 + C_7H_6O_2 + CH_4O.$$

One ounce of leaves of the best quality yields from one to two grains of the alkaloid. Various processes have been employed by different chemists for obtaining the pure alkaloid.

The following procedure, recommended by Lassen, I extract from Wurtz's "Dictionary of Chemistry":—

"He (M. Lassen) simply treats the Coca leaves with cold water or water at 60° to 80° C., precipitates the solution by subacetate of lead, and removes the excess of lead by the aid of a saturated solution of carbonate of soda. When the solution possesses a slightly alkaline reaction he agitates it with ether, which dissolves the Cocaïn. In this state the Cocaïn is not yet pure. To purify it completely M. Lassen dissolves it in water by the aid of a slight excess of hydrochloric acid, and submits the solution to dialysis; the salt, passing through more rapidly than the colouring matter, is obtained tolerably quickly, in a pure state; it suffices then to precipitate the base by carbonate of soda, and complete its purification by successive crystallisations from alcohol."

The alkaloid crystallises in four to six-sided monoclinic prisms. It is colourless and without odour, soluble in water, more so in alcohol, and very soluble in ether. It possesses a slightly bitter taste and a strongly alkaline reaction. It is not volatile, but melts at 98° C. and recrystallises on cooling. Several salts of Cocaïn have been prepared; of these the hydrochlorate is of greatest practical importance; and is, moreover, the one to which a place has been accorded in our new Pharmacopœia. The following is a convenient method of procuring it from the leaves:—An alcoholic extract, acidulated by hydrochloric acid, is dissolved in water, rendered alkaline by carbonate of sodium and shaken up with ether. The ethereal solution of the alkaloid is then allowed to rise to the surface of the mixture, drawn off, and evaporated. The residue is now treated several times successively with hydrochloric acid, carbonate of sodium, and ether, and finally decolorised by animal charcoal or by dialysis, or a combination of both methods, neutralised by hydrochloric acid and crystallised.

Hydrochlorate of Cocaïn occurs in nearly colourless acicular crystals, and dissolves readily in water, alcohol, and ether. One part dissolves in four parts of water. Its solution in water has a bitter taste, and leaves in the mouth a tingling sensation followed by numbness. It imparts to the tongue a sensation of cold, more evident when air is rapidly drawn through the mouth, resembling the effect produced under similar circumstances by peppermint.

From Coca leaves chemists have abstracted another alkaloid, and designated it Hygrin. This is a strongly alkaline liquid, possessing apparently none of the active properties of the leaf. It is stated that a substance allied to tannin exists in combination with the alkaline bases, and that, in the process of chewing the leaves with the addition of lime, this substance combines with the lime and sets free the alkaloids. I have already described pretty fully the more obvious effects produced by the ingestion of the active principles of Coca, and have endeavoured to discriminate between the statements that we may accept as indisputable facts and those that are of a doubtful or obviously erroneous nature. Let me, nevertheless, before proceeding further, emphatically state my belief that Coca ought no longer to be classed with opium, alcohol, or tobacco; on the contrary, it has been ascertained that it acts antagonistically to both opium and alcohol—nay, more, it has actually been administered with a view to allay the craving for these noxious substances to which opium eaters and drunkards are subject. It may, on the other hand, be said to partake of the properties of Coffee, Tea, Guarana, Chocolate, and Paraguay tea; also of Quinine and Belladonna. Like Coffee, Tea, Guarana, Chocolate, and Paraguay tea, a moderate dose increases the activity of the intellect, diminishes the sense of fatigue, stimulates the heart's action, and acts as a general tonic, invigorating the nervous system without inducing the period of depression that follows the use of alcoholic stimulants. Taken in larger quantity, symptoms ensue closely resembling those that follow the ingestion of an overdose of quinine—namely, singing in the ears, partial or complete deafness, flashes of light before the eyes, giddiness, headache, sleeplessness, and loss of appetite. It shares with Belladonna the capability of producing agreeable delirium, of allaying pain when locally applied, and of dilating the pupil of the eye and affecting its accommodation. In excessive amount, the alkaloid and its salts are capable of causing death chiefly through an influence on the sensory columns of the cord, that finally terminates life by arresting the function of respiration. Before death the blood pressure falls, while the temperature rises. The alkaloid cannot, however, be regarded in the light of a virulent poison, for it is recorded that a man swallowed one and a half grammes, with the intention of committing suicide, but did not even suffer from severe illness in consequence. In addition to the foregoing, the active principle of Coca produces effects peculiar to itself, the most noteworthy of

which is the local insensibility to pain that ensues after its application to various parts of the body. The discovery of this local anæsthetic effect may be said to be one of yesterday, for little more than two years has elapsed since it was first made known. At a meeting of the Ophthalmological Congress, held on the 15th September, 1884, Dr. Köller proved experimentally to his *confrères* that, after applying a solution of hydrochlorate of cocaïn to the surface of the eye, it was not only deprived of ordinary sensation, but that cutting and other operations could be performed on it without pain. Since then the experience of a host of oculists has amply confirmed the results first obtained by Dr. Köller. It has, moreover, now been ascertained that the alkaloid exercises its anæsthetic properties when applied to other mucous membranes besides the conjunctiva. Its mere contact with the skin is not followed by such marked effects as are observed in the case of the mucous membranes. Injected subcutaneously, however, by the hypodermic syringe, it has been found to deprive the skin and subcutaneous tissues of both ordinary sensation and susceptibility to pain over an area extending for a considerable distance from the seat of puncture.

The strength of the solutions usually employed to produce local anæsthesia varies from four to twenty per cent. of cocaïn hydrochlorate. The solution may conveniently be applied to the eye in the form of a very fine spray, thus obviating the irritation caused by dropping it into or brushing it over the highly sensitive surface of that organ. In this form also it may be advantageously caused to act on the throat, the larynx, and the cavities of the nose. I shall not weary you with an enumeration of all the various operations and aches in which practitioners have availed themselves of its pain-killing powers. I may, however, be permitted to express a doubt whether it has yet obtained a full and fair trial in the shape of suppositories in painful and spasmodic affections of the rectum and anus, in the form of medicated pessaries, in similar conditions of the vulva, vagina, and uterus, and in solution or otherwise, with a view to diminish the irritation and pain experienced by patients during the introduction of instruments into the urethra and bladder.

The anæsthesia produced by this drug is said by some authorities to be comparatively superficial, while others affirm that it extends to a depth sufficient to render such an operation as enucleation of the eyeball painless.

A serious, but it is to be hoped not insurmountable, obstacle to the freer use of this valuable remedy lies in its very high price. On looking over a price current of drugs for October, 1885, I find that hydrochlorate of cocaïn is there quoted at fourpence per grain, or, in other terms, more than seven pounds sterling per ounce. At that time it was, therefore, worth more than its own weight in gold. I am told, however, that it can to-day be bought at about twopence per grain. Without doubt the greatly increased demand that may now be reasonably looked forward to will prove an incentive to existing growers of the plant to extend the limits of their Cocals, and an inducement to other persons to embark their capital on an enterprise that promises so fair a prospect of profitable returns. There is reason also to believe that coca might, like cinchona, be successfully cultivated in India and other tropical regions. The process, moreover, for extracting the alkaloid from the leaves (which is a very expensive one) will probably, now that many chemists are directing their attention to the subject, be simplified and effected by the aid of cheaper materials.

Judging from the numerous additions that have of late been made to our Materia Medica, it is clear that we are far from having exhausted the possible sources whence we may hope in the future to derive remedies as yet unknown to medical science. We need be under no apprehension lest we thereby suffer from a plethora of material—an *embarras de richesses*. The more precise methods we now employ for determining the effects of drugs have led to the weeding out of a goodly number, and have thrown into the cold shade of neglect many that once basked in the sunshine of universal esteem. Let us, then, give a hearty welcome to this new candidate for favour, and trust that it may long continue to be employed in those kindly offices it promises to perform.

ART. XVII.—*On the Clearance of an Unhealthy Area, under the Provisions of the Public Health Act.*[a] By SIR CHARLES A. CAMERON, Ex-President and Professor of Hygiene and Chemistry, R.C.S.I.; Superintendent Medical and Executive Officer of Public Health for Dublin.

A SURVEY of the houses in the city of Dublin, which I carried out in 1882, showed some startling facts. I found that whilst 54,725 families, comprising the population of the civic districts of the metropolis, occupied 24,211 houses, no fewer than 32,202 of those families resided in only 7,234 of the houses, leaving 16,977 houses to be occupied by 22,523 families. The 7,234 houses contained 48,116 rooms, or an average of $1\frac{1}{2}$ rooms per family. In many of these houses the number of families was from 10 to 12, some of them occupying a single apartment. A large proportion of the houses were originally occupied by single families, and were not, therefore, designed as tenement houses. There is, however, one advantage in connection with houses of this class—namely, the large size of the rooms and their airy stairs and lobbies. On the other hand, they are more or less dilapidated, having cracked walls, worm-eaten floors, rickety stairs, bad roofs, ill-paved yards, and defective sanitary accommodation. Notwithstanding the poor accommodation which those houses afford, the rents extracted from their poverty-stricken tenants are, I am certain, higher than in other large towns. I find that the valuation for taxation purposes of the 175 houses in Jervis-street, North Cumberland-street, Church-street, and Upper Mercer-street, amounts to £2,677 10s., whilst the rent exacted from the 1,074 tenants who occupy the 1,482 rooms of those houses is no less than £8,311 13s. One house, valued at £8 yearly, is rented in tenements at £52! Towards the close of the year 1879 I commenced to take vigorous action in reference to the improvement of the Dublin tenement houses. I found that a large number were placed under such conditions as to be incapable of improvement. Some were situated in very narrow courts, others were blocks of lofty buildings, with no yards, or totally insufficient ones. A large number were semi-ruinous. The owners of those defective dwellings were brought into court, and, with a single exception, orders to have them closed and detenanted were obtained from the magistrates. The larger

[a] Read before the Sub-Section of State Medicine of the Academy of Medicine in Ireland, Thursday, Feb. 3, 1887.

number of those unhealthy dwellings were rebuilt or repaired, and subsequently re-opened, but nearly one-third were permanently closed. As an example of the total demolition of houses, I may mention the case of the houses lying due north of the Synod Hall and old tower of St. Michael's, Christchurch-place. These houses were closed about five years ago, and were subsequently pulled down. The site is now the waste ground at St. Michael's-hill. The total number of houses detenanted and closed from the August 31st, 1879, up to December 31st, 1886, was 2,068, exclusive of more than 650 cellars and kitchens, and several hundred rooms in other houses.

It has been urged that it would have been better had the owners of those houses been compelled to put them into tenantable order. This objection is generally urged by those who have no practical experience in the administration of the Public Health Acts. It is obvious that if the extreme measure of closing a house is insufficient to make its owner improve it, no other measure is likely to be successful.

I do not agree with those who seem to think that an unhealthy population can be made a healthy one by merely providing them with clean and commodious dwellings. If the people of Dublin were well fed and clothed, and did not indulge in an excess of alcoholic liquors, I believe that the city would have a low death-rate, notwithstanding its wretched tenement houses; still it must be admitted that unwholesome dwellings constitute a somewhat serious factor in our urban mortality, and it is incumbent upon the sanitary authorities to effect as great an improvement in the condition of the homes of the people as they possibly can. The question is—How is this improvement to be best effected? The municipal authorities have certain powers conferred upon them in reference to ruinous and unhealthy premises. These powers are derived from the Towns Improvement Act of 1847, the Artisans and Labourers' Dwellings Act of 1868, and the Acts amending the same, passed in 1879; and the Housing of the Working Classes Act, 1885. Under the last-named Acts the following procedure may be adopted:—Should the Officer of Health find any premises in such a state as to be dangerous to health, and thereby unfit for habitation, he is to report the circumstance to the Local Authority. The latter then submits the report to the Surveyor or Engineer, who examines the premises, in order to ascertain whether or not it can be rendered habitable by structural alterations and improvements, or whether or not they should wholly or

in part be demolished. The Local Authority next submits the two reports to the owner of the premises, and appoints a time and place to consider the reports, and any objections to their recommendations which the owner may offer, by letter or personally. The owner may argue that the work is unnecessary altogether or in part, or that it should be done by some other person, or by the parish or district in which the premises are situated. (The Act is not clear as to the work being done at the expense of the district, and it may be held that the Local Authority should do the work as a public improvement). The Local Authority may then pronounce an order, which is subject to an appeal to the Court of Quarter Sessions, and, should the objections to its order be overruled, the Local Authority may cause a specification of the necessary works to be prepared, and ascertain the cost of same. A notice that this has been done is served upon the owner of the premises, who may inspect the plans, &c., and transcribe them at the office of the Local Authority. He may, within three weeks after receipt of the notice, object in writing to the specification and estimates, &c., and may support his objections personally before the Local Authority. The latter, on hearing the objections, may refuse to entertain them or not, as it thinks fit. For the second time the owner may appeal to the Court of Quarter Sessions, and a further appeal, or a statement of facts to the Court of Queen's Bench is permitted.

When the questions in reference to the necessity of remodelling, &c., the premises has been settled, the owner must be called upon to do the necessary works. If there are several owners, then they are to be called upon in the order of title. If the owner's residence cannot be ascertained, due notice must be served upon the occupier or posted on the premises.

When the owner fails to execute the work, the Local Authority may do it, and obtain from the Court of Quarter Sessions an order charging the premises with all the expenses incidental to the improvements, together with interest at the rate of 4 per cent. per annum on the money expended; the charge upon the premises is to have precedence over all others.

In case the premises are to be demolished and not repaired, the owner is to be called upon to do the work, and should he fail to comply with the order, the Local Authority may do the work, and sell the old materials to reimburse itself for the cost of the operation.

The person who on the order of the Local Authority makes any improvement in premises is entitled to a "charging" order upon them to the extent of £6 per cent. on the sum expended. The expenses of executing the Act may be defrayed out of a local special rate, which is not to exceed 2d. in the pound, and a loan for the purposes of the Act may be procured.

The difficulties in the carrying out of the section of this Act dealing with ruinous and unhealthy buildings are very great. In the first place, the processes are very slow. The Medical Officer makes a report that a house is unfit for human habitation. The Sanitary Authority considers this report, and directs the Surveyor or Engineer to make an examination of and report upon the premises. This report has next to be considered by the Sanitary Authority. One month at least will be required for all these procedures. A notice is next served on the owner; then he has to attend before the Sanitary Authority to state objections, if he have any, against the opinions of the Medical Officer and Surveyor. The duration of the period of the notice is not mentioned in the Act, but a fortnight's notice would not be too much.

The next step is the preparation of plans and of estimates. Two or three weeks at least would be required for this purpose. A notice is served on the owner that the plans are ready for his inspection, and may be seen during a period of three weeks. He may appeal against the order of the Sanitary Authority, and the appeal may not be heard for months. One month after the decision of the Court of Quarter Sessions, or three after service of the order, the owner is to state whether or not he is willing to execute the works. If he neglect or decline to do the work, a notice that he is to execute them within two months is served upon him, and if he still fail, and that there is another owner secondary in title, a similar notice is served on him; and in this way every person having a beneficiary interest in the premises must get two months' notice. In by far the larger proportion of the houses in Dublin there are as many as from three to six separate vested interests. After all these processes, which probably would occupy from one to three years—depending on the number of interests to be dealt with—the Sanitary Authority might themselves execute the work. The Court of Quarter Sessions must then be applied to for an order charging the costs of the proceedings upon the premises.

Supposing that the Sanitary Authority has rebuilt the defective

premises, then an order must be obtained from the Court of Quarter Sessions charging the expenses incurred upon the premises, together with 4 per cent. interest. This charge is to have priority over all others.

Under the provisions of the amending Act of 1879, the owner of premises which have been rebuilt or repaired by the Sanitary Authority could compel it to purchase the same. He will be sure to do so in all cases where the rent obtainable from them is not sufficient to pay the interest on the money expended by the Sanitary Authority, and the head-rent of, and any other charges that may be on, the premises. On the other hand, if the rent pay fully the cost of rebuilding, the owner will keep possession of them. When the Sanitary Authority acquires possession of premises, instead of being allowed to keep and make the most of them, it is obliged to sell them at once, and pay over to the owner any sum which it may receive in excess of the amount expended by it to the owner; but this defect of the Act has been remedied by the Housing of the Working Classes Act of 1885.

The 75th, 76th, 77th, and 78th sections of the Towns Improvement Act of 1847 (10 & 11 Vict., c. 34), enable the Sanitary Authority to deal with ruinous and dangerous houses, walls, &c. These provisions apply only to houses, &c., which are likely to fall and injure persons. I think that the Towns Improvement Act, which is incorporated with the Dublin Improvement Act, 1849, is a better one to apply to ruinous houses than the Artisans and Labourers' Dwellings Act. Supposing that a house, which has been closed as unfit for habitation on the action of the Sanitary Authority, is allowed to become ruinous, then it may be assumed that it is likely to fall. A notice to take down, secure, or repair such premises within three days, is served on the owner, or, if he cannot be found, it is posted on the premises. If the owner fail to comply with the notice, the Police Magistrates may, on application, make an order to have the work done within a specified time. If the owner again fail, then the Sanitary Authority may put the house into repair, or rebuild it. The expenses incurred, if not paid on demand, may be recovered by a warrant of distress issued by the Police Magistrate. Lastly, if the distress cannot be effected, the Sanitary Authority may, after giving 28 days' notice, take possession of the premises, which, being valued, the owner is to be compensated for any interest he may have in them, after the cost of repairs has been deducted. It would, I think, rarely

happen that the owner would get anything in the way of compensation. Whatever he would be entitled to should be determined under the provisions of the Lands' Clauses Consolidation Act of 1845. The Sanitary Authority appears to be unfettered as regards the disposal of the premises, as the Act states that it may "sell or otherwise dispose of said buildings or land." I think, then, that if any action is to be taken in relation to ruinous houses, our own local Act is incomparably superior to the Artisans and Labourers' Dwellings Act. It is quicker in operation, simpler in its provisions, and requires very little law procedure.

The Corporation of Dublin have cleared two unhealthy areas under the provisions of the Artisans and Labourers' Dwellings Act. The first cleared is that known as the "Coombe Area." The ground cleared contained 202 houses, inhabited by 984 persons, and situated on an area of 4 acres and 36 perches. The total cost of the clearance amounted to £24,367 12s. 10d., or at the rate of £5,769 9s. 9d. per acre. The cleared ground was let on lease for ever to the Dublin Artisans' Dwellings Company, at a rent of £200 a year. If this rent be capitalised at 25 years' purchase, at 4 per cent., the sum would be £5,000. The net cost of the clearance was, therefore, £19,367 12s., or at the rate of £4,840 1s. 1d. per acre—that is, at the rate of £19 13s. 8d. per head of the population of the area.

The second district cleared is that known as the "Plunket-street Area." It comprised 3 acres 2 roods and 22 perches, upon which there were 159 houses, occupied by 1,619 persons. The gross cost of the clearance amounted to £32,332 14s. 1d. The site has been let (chiefly to the Artisans' Dwellings Co.) at £190. Capitalising this rent at 4 per cent., 25 years' purchase, the cost of the scheme is reduced to £27,582 14s. 1d., or at the rate of £7,582 17s. 6d., being £17 0s. 9d. per head of the population of the area.

Thus it will be seen that the unhealthy areas cleared contained 7 acres 3 roods and 18 perches, and were inhabited by 2,603 persons. The clearance cost at the rate of £5,971 per acre.

I have now to describe a clearance which I have effected, upon a small scale no doubt, but still without cost to the ratepayers. It includes nearly the whole of Wood-street and Arthur's-lane, and a small part of Oliver's-alley. The population in this district was very dense, and the houses were very old and insanitary, and were the constant abode of zymotic diseases. An account of the population of Wood-street, Arthur's-lane (formerly termed Maiden-lane)

and Oliver's-alley, is given in the Rev. James Whitelaw's "Essay on the Population of Dublin," from his own survey made in 1798. The following are his figures:—

Wood-street.

Houses.				
Inhabited	Waste (? Vacant)	Males	Females	Total
61	1	198	276	474
	Maiden (Arthur's)-lane.			
14	0	70	87	157
	Oliver's-alley.			
1	–	8	2	10
76				641

Dr. Grimshaw, Registrar-General, has kindly furnished me with the population returns for these places according to the Census of 1871:—

	Population.
Wood-street - - - - -	315
Arthur's-lane - - - -	119
Oliver's-alley - - - -	13
	447

These figures show that the locality was not so congested in 1871 as in 1798.

In 1881 I commenced an onslaught upon the houses in Wood-street, Oliver's-alley, and Arthur's-lane. They were all in tenements, and with few exceptions were in possession of middlemen or persons who take by lease or otherwise houses for the purpose of subletting them in weekly tenancies. These middlemen were, as a rule, unable to put the houses into a proper state of repair, and they were too poor to pay their rents to their landlords when the houses were closed by magistrate's order. The owners of the houses would not put them into a proper state either. One after another nearly all the houses were detenanted and closed, and gradually became ruinous, so that ultimately, with two exceptions, they had to be razed. The houses thus disposed of in Wood-street numbered 23; in Arthur's-lane, 11; and in Oliver's-alley, 1—total, 35; or, including 5 houses also demolished in the adjacent Golden-lane, 40 houses.

There are still remaining in Wood-street Nos. 18, 19, 20, 21½, 24, and 32, which at present have a population of 75 persons.

Nos. 1, 2, and 4 Arthur's-lane give shelter to 14 persons; and 1 house in Oliver's-alley to 5 souls—total, 94 persons. The persons now residing in these places number 353 less than in 1871. The ground actually cleared is a little over a statute acre, and is fairly compact for dwelling purposes.

I have now shown that an acre of unhealthy houses, so to speak, has been cleared without cost to the ratepayers, whilst the clearances under the Artisans and Labourers' Dwellings Act have cost £6,000 per acre. This work has been done by making use of that part of the 107th section of the Public Health Act which defines as a nuisance "any premises in such a state as to be a nuisance or injurious to health"—a simple definition which leaves everything to the discretion of the magistrate, for should he consider the evidence satisfactory he can act under the 113th section, which provides that "where the nuisance proved is such as to render a house or building in the judgment of the court unfit for human habitation, the court may prohibit the using thereof until in its judgment the house or building is rendered fit for that purpose."

The lesson which the Wood-street clearance teaches is this:—It is possible, by vigorously enforcing the provisions of the Public Health Act to unhealthy dwellings, to clear with comparatively little cost to the ratepayers unhealthy areas on which the houses are unquestionably unfit for human habitation. No doubt such a procedure must often entail loss—not easily to be borne—on the owners or leaseholders of these unhealthy houses. Still, if a man owns a highly-diseased carcase of a cow, or a quantity of mouldy flour, he must submit to have them destroyed as unfit for human food; so also must those who own unhealthy dwellings submit to have them closed until rendered fit for human habitation.

ART. XVIII.—*Fixed Delusions in Mental Disease.*[a] By JOHN MOLONY, M.K.Q.C.P., L.R.C.S.I.; Medical Superintendent of St. Patrick's Hospital, Dublin.

I WOULD remind the Academy of Medicine that the following are simply clinical notes of cases, which I have grouped as fair types of "fixed delusions" occurring in various forms of mental disease and likely to be found in any lunatic asylum.

[a] Read before the Medical Section of the Academy of Medicine in Ireland, Friday, February 25, 1887.

Acute Delusional Insanity, with Auditory Hallucinations.

Case.—H., aged forty-four years, served 21 years in the army, six of that period in India; left the service owing to ill health (form not ascertainable); insanity in mother's family; was admitted to St. Patrick's Hospital in 1885. For six months before admission he suffered from delusions of suspicion, viz.:—He was followed by "a gang," and in consequence it became necessary for him to go to "out of the way places" in Great Britain and Ireland, but after being a few days or weeks in a place he was "discovered." He complained repeatedly to the police and also to the proprietors of hotels he visited of this "watching system," and on account of being followed he was obliged to carry arms.

"The gang" consisted of three or four young men dressed like grooms. He never saw them, but he knew the kind of men they were. On one occasion he "thinks" he saw a member of the gang, and went to call a policeman, but before his return the fellow had disappeared. The gang managed in some way to get into their possession important private manuscripts and diaries belonging to the officers of his regiment.

After travelling about for several months he settled down to farming, but it was not long until his whereabouts were discovered, and then "the gang" increased in number, and commenced giving him "awful" annoyance by placing dynamite in his hay-cocks and corn-stacks, several of which he had to get knocked down to hunt for the explosive, but "those fellows" were too sharp for him, and he never made a seizure. This state of things continued for some time, when suddenly one evening, while reading his newspaper, the gang commenced "tubing" at him—that is, listening to him and to his thoughts through long tubes connected with the bell-wires. Occasionally "they booed" at him for the purpose of exciting and making him speak, that they might become acquainted with his voice. This, however, he soon checked by getting electric bells through the house, which for a time "puzzled" the gang. There were also several attempts made to poison him through his food. For some weeks before admission there was a considerable amount of noisy excitement with occasional outbreaks of violence, during one of which he nearly shot a friend.

On admission.—H. is a muscular, powerful man of the middle height; his pupils are equal and respond to light; no tremor of tongue or of his limbs; pulse 80; temperature normal; he has a careworn, anxious expression of countenance; his hair, which is abundant, is tinged with gray; his tongue when protruded does not deviate to either side, and is clean and regular on surface; knee-jerk on both sides normal; his sight and hearing appear normal also; his clothes are tidily put on, but look uncared for and unbrushed; he is not communicative, but answers ques-

tions sharply and to the point, and his articulation is not thickened. His pockets contained the following articles (which he afterwards informed me were for "circumventing" the gang):—Several pounds weight of keys, loaded gun and revolver cartridges in the same pocket with boxes of lucifer matches, two clinical thermometers, a couple of two-foot rules, pieces of copper wire, rubber tubing, dog whistles, a considerable sum of money in loose coin and notes, balls of twine, notebooks, letters to heads of detective departments in Dublin and London, and various other things.

For about three weeks after admission, beyond being mysterious and silent on the subject of his delusions, there was nothing remarkable in his condition. He acknowledged to having had syphilis when a young man; never suffered from sunstroke; was not a tippler or smoker, but occasionally has had a "B. and S." too much. He reads his newspapers, plays billiards, eats well and sleeps well, is tidy in his person and habits. One day he called me into his room, and informed me that he was "tracked at last through the means of a telephone, but he had discovered the name of the leader of the gang, 'Bugger Bill,' and that *he* had passed a wire over the house by means of a kite, and attached it to the gas and water pipes." From this time "H." was always ready to speak on the subject of his delusions and hallucinations. He was constantly making "contact breakers"—a piece of string or wire with a coal cinder attached, which he tied to the gas or water pipes. He placed pieces of rubber under the legs of his bed, and daily went his rounds examining the pipes with a roll of paper, which he used as a stethoscope. If he was satisfied with the result of his examination he exclaimed, with a knowing wink, "Now, Bugger Bill." There were certain parts of his room in which he heard the voices loudest. Once or twice the "voices hinted to him to do away with himself." For about twelve months he continued in this state, writing three or four letters daily to the Lord Lieutenant, Chief Secretary, and others. The following is an example:—

"St. Patrick's Hospital,
"James's-street, ——, 1886.

"My dear Mrs. ——,—On Sunday last I put up a wire connecting the gas and water pipes of this house as a means of defussing the electricity which is sent in to this place by "Buggher-Bill" and thus to lesson the noise of the speaking and contact breakers the later of which produce effects for the time that the electricity is turned on strong of neuralgia dizziness and headache which will effect your boy and baby more than grown up people and as my stay here has been the means of B. B.'s coming here, I think it well to tell you of the above and of course I cannot say what will be their after effects. Now this after noon I find that the wire has been removed and you will now have them in their

full force. Dr. Molony I am sorry to say has not met me half way in my wishes to lesson what the police are unable to cope with you should try and have this wire replaced and an-other put up nearer to Carter's gate. If you wish you can have this letter sent on to my solicitors Messrs. ——.

"I remain yours

"H. ——."

H. increased in bodily weight, was not noisy at night, slept quietly, and his appetite was good. As a rule he was bright and cheery. Only on two occasions did he show a tendency to violence, on my refusal to allow him to remain in bed. He was perfectly clear on all the newspaper topics of the day. His memory for recent and distant events was good. Except for his delusions, he was an agreeable and pleasant man to spend an hour with, and gave interesting accounts of different parts of the world which he had seen. I noticed for some months before his transfer to another asylum a considerable change in his expression. He wore a sullen, ill-tempered look, and was rather inclined to be blasphemous.

In preparing the notes of this case for the Medical Section, I confess that the name "Bugger Bill" grated unpleasantly on my ear, but when I considered the use of such an expression in the daily conversation of a refined and well-educated gentleman, as also in his voluminous letters to the Lord Lieutenant, female relatives, and others, the idiom, though no doubt unsavoury, appeared too valuable a feature amongst his other symptoms to be omitted.

Chronic (Active) Melancholia, with Fixed Delusions of Persecution by Unseen Agency.

Case.—A. H., aged sixty-three; insanity in father's and mother's families; brother insane; exciting cause of her illness said to be "grief and pecuniary loss;" has been insane for several years. She is apparently a strong, healthy woman, with a melancholic expression of countenance. She walks "to and fro," wringing her hands, picking at her fingers and face, reiterating "I am not mad but bad," and bemoaning her wicked and sinful life; she considers herself too degraded to shake hands with anyone. There is no uterine or ovarian trouble observable, and there is nothing special in the state of the vulvæ, nor does she suffer from any vaginal discharge. She ceased to menstruate thirteen years ago.

A. H. states that for several years she has been brought out every night, dressed in fantastic garb, by a gang of sailors and soldiers, who ravish her, and then bring her for a similar purpose to the animals in

the Zoological Gardens. She "constantly thinks" she sees on her food and on her room walls "shapes" of the heads of wild animals she has been with the night before. She is carried off on a car in a state of stupor from "drugs" or "drink" (paraffin oil and porter mixed). She is unable therefore to describe the men, car, or colour of the horse. The supposed outrage occurs between the hours of midnight and four o'clock a.m. I have frequently visited her at and between those hours, and have found her sleeping, but on awaking she at once states, "I have only just been brought back." High walls, locks, or lofty windows, appear no obstacles to her imagination. I have never found on those occasions increased temperature or quickened pulse. This patient before admission made three attempts at suicide. She "jumped into a well six feet deep on her head, but could not sink or keep down; she tried to sink in a deep lake, but would not drown; she endeavoured to cut her throat, but the knife was not a sharp one." These speculations were much too half-hearted to be the "genuine article," but were highly characteristic. Her memory for recent and distant events (exclusive of matters connected with her delusions) is good. She sleeps well after midnight, has a good appetite, her bowels act regularly, nothing special in the state of her urine, and her habits are cleanly.

Chronic Dementia, with Fixed Delusions.

There is a peculiar delusion prominent, amongst others, in the case of one of our oldest inhabitants, who has been in St. Patrick's Hospital for 49 years.

Case.—M. R., when asked the reason for her being an inmate, states that she "is an affirmation waiting to be called by the Crown to give evidence concerning the murder of the Son of God, which took place in Watling-street." When further questioned, she says, "He was my brother." It appears that her father, in days gone by, held an appointment in Green-street Court, where prisoners are tried by the Crown. This woman's bodily health is good; her habits are cleanly; she is occasionally noisy at night.

Chronic Delusional Insanity.

Case I.—G. (otherwise Marchioness of Picardy), 35 years insane, "suffers much from magnetism and nitrate of silver." Her sole object in life appears to be in stealing dinner-plates, for the purpose of placing them under her when in bed. The usual number "annexed" is three, which are found under her head, back, and legs, to "keep vile creatures from nitrate of silvering and magnetising her."

Case II.—D., 40 years insane, states that "four most powerful policemen, who stand at the four points of the compass outside the building,

think cruel and severe thoughts *at* him, which make his throat sore;" "besides, they also think indecent thoughts *at* him, which cause him to blush, and they press their minds so heavily *on* him that he fears ulcers will break out over his body." This patient is of an economising turn of mind. To prevent his boots being worn out, he changes them from one foot to the other on alternate days; for a similar reason he cuts the heels out of his socks. He has invented and made an "everlasting stocking." Is a self-taught bookbinder—very useful in connection with our library.

"*Alvine Evacuation Eating.*"

Some lunatics will eat anything, from old boots or clothes to tenpenny nails. Amongst all forms of insanity, acute or chronic, "wet and dirty" habits may be found—the prolonged continuance of either is an unfavourable symptom. Two out of four cases under my observation, which I bring before the Section on this occasion, are painful instances of how low man may fall. Dirt-eating ("pica") is not an uncommon disease amongst certain children and hysterical young women, but amongst the insane only am I aware of the filthy habit to which I have alluded.

Case.—H. S., a chronic dement (a well-educated professional man), aged sixty-five years, eats fæcal matter, recent or decomposed, whenever he can get an opportunity. Apparently he has never been the worse for this disgusting practice, which for several years he has indulged in. A female chronic dement of the same age is also addicted to this painful propensity. She has had frequent attacks of colic and vomiting after her unsavoury banquets.

I have met with several instances of this habit amongst the chronic insane. Spitzka speaks of it occurring in acute insanity, and Mickle in the early stages of general paralysis of the insane.

The only point of interest in connection with these cases is the position they hold in regard to the pythogenic origin of enteric fever. If I may be allowed, I would make a very limited digression with reference to what may be called "abortive" enteric fever (arising from an apparently *less* exciting cause, and from independent and isolated centres), many cases of which I have seen amongst young agricultural labourers in the country at "seed time." These men (and indeed women too) work largely with their hands in teasing out and spreading manure on the potato crop. They also carry heavy basket loads of it on their backs, so that their clothes become saturated with the manure. The days are showery, often mild and

warm, during "seed time," the nights cold and damp, and the clothes worn through the day are too often utilised as extra bed-covering at night—the labourer living day and night for weeks in an atmosphere poisoned by decomposing manure exhalations. In a few days he suffers from rigors, headache, muscular pains, and loss of appetite; has a brown furred tongue, with raspberry tip and edges; ochrey-yellow diarrhœa; tympanites, with right iliac gurgling on pressure; epistaxis, slight bronchial râles over front of chest, malar flush, dilated pupils, sometimes delirium, evening rise and morning fall of temperature. The disease declines and disappears gradually in from six to twelve days, sometimes going on to twenty or thirty days. Only in cases over ten days have I found an eruption, the discovery of which is often a difficulty in the Irish peasant. As a rule, all the cases do well. The temperature rarely exceeds 103°, except in the prolonged cases.

The cause and effect are so palpable in connection with the country cases, and the absence of febrile symptoms in the lunacy cases, that I consider the subject may be of interest to this Section. Murchison speaks of "abortive enteric fever" occurring in country places, which is often spoken of as "febricula" or "simple continued fever," but I cannot find in his work an account of circumscribed outbreaks, such as I mention, appearing under *like* conditions.

Remarks.—Clouston, in his work on "Fixed and Limited Delusions" gives the origin of monomania as arising in four different ways in different cases:—

1st. It is a gradual evolution out of a natural disposition—a proud man becoming insanely and delusionally proud, a naturally suspicious man passing the sane borderland with his suspicions. This is the most common origin of the disease. There is usually a hereditary predisposition to insanity in those patients. The disposition may, in fact, be regarded as the nervous diathesis out of which the disease springs.

2nd. It remains as a permanent brain result and damage after attacks of mania and melancholia, especially the former, from which the patients recover up to a certain point, but no further. (This is the origin in one-sixth of the cases at Morningside Asylum).

3rd. It arises from alcoholic and syphilitic poisoning of the brain and body, from traumatic injuries of the brain, or sunstroke, or from gross lesions, such as embolic softening. Such patients usually have the delusional insanity of suspicion or unseen agency. They are the most dangerous class of monomaniacs on the whole.

4th. It may arise out of perverted organic sensations caused by constitutional diseases, characterised by lack of trophic power, and brain anæmia, notably tuberculosis, or out of perverted sensations from local diseases misinterpreted by the brain. As a matter of fact, a very large proportion of the cases of monomania of suspicion die of phthisis. Any man with an anæmic, ill-nourished brain, is apt to be morbidly suspicious.

"Two chief things, to be kept in mind in the diagnosis of monomania, are:—1st. Not to call any disease by that name that has not existed unaltered for at least twelve months; 2nd. When there exists along with the delusional condition any general brain exaltation or excitement, or any general depression, not to call it by that name till those have passed off." [a]

Spitzka, in speaking of delusional insanity, states:—"Sufferers from hallucinations of hearing are particularly dangerous, and in subjective self-defence will kill or maim others, or to escape their persecutors may resort to suicide. Hallucinations of the agreeable type are generally more unfavourable as to prognosis, although their episodial results may be less serious from a medico-legal view. False taste and smell perceptions are common in hypochondriacal insanity and in paretic dementia. In the latter they have a bad import, and indicate rapid deterioration. This applies also to masturbatory insanity, of which disorder such hallucinations are almost characteristic.

"In early times the aural hallucinations of the insane more frequently related to celestial voices. The introduction of the speaking tube was followed by a transferral of the voices to imaginary systems of tubing in the walls of the patients' apartments, and so on to the 'wire system' of the telegraph and telephone."

"The prospect of recovery is certainly very bad in cases of delusional insanity that have lasted over a year, but one is surprised sometimes by occasional recoveries after many years.

"There is a tendency to mental enfeeblement as time goes on. Many cases end in complete dementia after a few years, and in most the intensity of the conviction of the delusion and the aggressiveness with which it is put forward tend to diminish as time advances.

"Most monomanics live long—all but the cases of morbid suspicion, who, as I said, mostly die of phthisis.

"Delusions of annoyance by electricity, magnetism, or unseen

[a] Clouston.

agency, if they last long while the depression abates, are very unfavourable as regards prognosis. But, so long as there is distinct depression, of which these delusions are an accompaniment, the case should be considered curable, and treated as such."[a]

From a limited study of works on the pathology of cases similar to those so feebly brought under your notice by me in this paper, I should say that if you look for "brain lesions," it will be to feel disappointed. In the books you will probably find an honest confession, gently broken to you in a long chapter glistening with newly-coined phraseology fresh from the mint, and concluding perhaps with a statement to this effect:—"All these *post mortem* appearances may be found in the brains of persons who have never been insane, nor can it be maintained that they indicate insanity."

Art. XIX.—*A Year on the Belooch and Afghan Frontier.*[b] By P. H. Fox, F.R.C.S.I.; Surgeon, Army Medical Staff.

INTRODUCTION.

In accordance with the Army Circular of November 1st, 1884, I have compiled a report on the Belooch and Afghan Frontier, and in the present communication I propose to give a topographical description of the country. To this I will add some remarks on the diseases most prevalent in Quetta, and also an account of the ambulance usually employed and best suited for service in a hilly country like South-Eastern Afghanistan. I have been more or less encouraged to undertake an essay on these subjects because Quetta and the Belooch Frontier have, during the last five or six years, attracted an unusual amount of public attention. Besides, the great majority of my professional brethren know very little about service in these parts, and many gentlemen, who have not lived in the country, have formed very erroneous ideas as to the real nature of the climate, &c. In fact, some of these gentlemen have gone so far as to state that the climate of Quetta was similar to that of England. But there never was a greater mistake.

Meteorology; General Remarks.—The English and Belooch climates have no similarity or resemblance whatever. In England the seasons are always mild, while on the Belooch and Afghan

[a] Clouston.

[b] Being a Medical Essay on the Topography of Quetta and the surrounding country, together with a detailed description of the diseases, &c., peculiar to these parts; Quetta ambulance, &c.

Frontier they are excessively severe. In the one people go abroad regardless of the sun; in the other the helmet and sun topee are as indispensable as the fur jacket. The summer weather in Quetta and the Bolan is as hot as the hottest months in India, whereas in winter it is as cold as in parts of Russia. But in order to show clearly the peculiar nature of the climate of Quetta and South-Eastern Afghanistan, it will be necessary to have recourse to some meteorological statistics. For this purpose I must refer to the observations which were made at the Quetta Observatory, and which were kindly lent to me by Dr. Fullerton, the civil surgeon. Looking through these observatory records I find that December, January, and February, are the coldest months, while June, July, and August, are the hottest. The prevailing winds are north and north-west in summer and winter, while during the remainder of the year the direction of the wind is usually south or south-east. At the same time it must be mentioned that owing to the remarkably hilly nature of the country the direction of the wind is very inconstant, and often in the twenty-four hours it varies from north to south. During the hot weather the wind commonly blows *down* the Bolan in the daytime, while at night the hot air from Sind rushes up the pass as if through a chimney. February, March, and April, are the dampest and wettest months of the year. But the rainfall is very uncertain, and varies from year to year. In 1884 the rainfall was only 6·47 inches, whereas in 1885 there was a downpour of 20·84 inches, being more than three times the amount of the previous year. The snowfall is also various, but it generally bears a direct proportion to the rainfall. The coldest days in 1884 were January 25th, February 25th and 27th, when the minimum temperatures taken in the shade by the radiating thermometer were respectively 1·1°, 1·7°, and 1·6°. On these days the maximum taken in the sun by the same thermometer was respectively 59·2°, 78·4°, and 105·4°. The average lowest for the three coldest months in 1884 was 11·6°, while the average highest in the sun during these months was 105·2°. The coldest days in 1885 were December 13th to December 24th, when the minimum temperatures, as registered by the radiating thermometer, and taken on the grass, varied from zero to 9·6°. The maximum taken in the sun averaged 115° on these days. Now, with regard to the three hottest months in the year—viz., June, July, and August—the minimum taken on the grass varied from 35·9° to 64·3° in 1884, while the maximum taken in the sun varied from

131° to 144°. In 1885 the temperature during these months was considerably higher; the minimum taken on the grass varied from 35° to 66°, while in the sun the maximum ranged from 144° to 160°. The hottest day in 1884 was June 30th, when the temperature in the shade, as taken by the dry bulb thermometer, was 97·4° (max.), the minimum taken by the same thermometer being 68·4°. The hottest day in 1885 was June 23rd, when the maximum in the shade was 99·8°, and the minimum 64·3 . These readings were considerably higher in winter than in summer, and it may be laid down as a general rule that there is a difference of 30° between the maximum and minimum temperatures in the shade, while in the open there is all the year round a difference of 100° between the temperature of the day and that of the night. The barometric readings taken in 1884–5 varied from 24·50 to 24·90 inches. Roughly speaking, the prevailing barometric readings were 24·70 inches.[a]

Topography; General Survey.—The British occupation of this frontier dates from 1877. Our Government pays rent to the Khan of Khelat for the occupation of the Bolan and Quetta. The Peshin Valley and all that territory east of the Khojak Amran range were assigned to British administration by the treaty of Gandamak. Consequently, all the numerous passes and valleys which lie east of the Khojak belong to the British Government. Chuman, a fort which is situated on the Afghan side of the Khojak Pass, is the present extreme limit of this frontier. A glance at the map is sufficient to show that this territory is very mountainous and very extensive. These mountains vary from 7,000 to 13,000 feet above the sea-level. They are for the most part bold, bleak, and rocky, and for three months of the year the highest peaks are covered with snow. They have a north-easterly and south-westerly aspect. Very little vegetation is to be found on them, and consequently they afford scarcely any food or shelter for birds or animals. However, some wild sheep and goat and other herbivorous animals are found on these hills. Amongst the carnivorous animals the wolf, the jackal, the fox, and the hyena are the most common; the leopard and black bear are said to exist, but they are very, very scarce. Eagles and vultures frequent these hills in the summer, but they are rarely or never seen in the winter. The mountains which surround Quetta and the Bori Valley are very rocky and precipitous. The Khojak Amran range are much less

[a] These barometrical readings are not reduced to sea-level.

bold, having for the most part rounded summits and sloping sides. Between the uppermost parts of all these mountains small plateaux exist, and on these plateaux the juniper, the cedar, and blackwood olive are found growing in great perfection. They are, however, being constantly cut down for fuel, and consequently they are getting scarcer and scarcer every year. Geologically speaking, all these hills are composed of thick, porous slate, and limestone in its various forms. They are said to be rich in minerals and even rock oil. A vein of coal has been discovered in the Bolan Pass, while in the Hurnai Pass rock oil is known to exist.

Having said so much in connection with the mountains, let us now turn our attention to the valleys. These are very numerous, and are connected with each other by mountain passes, which have a most tortuous and intricate course. These passes are quite dry for the most part of the year, but in rainy weather mountain torrents flow down, rendering them quite impassable. The best known and most important of these passes are the Bolan, the Hurnai, and the Khojak. The Bolan Pass—from Rindli to Quetta—is 85 miles in length; the Hurnai Pass—from the Nari Gorge to Peshin—is 150 miles. Railroads are at present in course of construction in both these passes. When finished they will be connected with each other, so as to form an alternative route from the Peshin Valley to Sibi. The length of the Khojak Pass—from Kilabdula to Chuman—is 15 miles. The tops of the Bolan and Hurnai Passes are each about 5,500 feet above the sea-level; while the top of the Khojak Pass is 7,000 feet above the sea-level. From the foot of the Khojak Pass to the summit the ascent is about 2,500 feet, whereas the descent on the other side is considerably more, being about 3,000 feet. It must also be mentioned that this pass is very short, but exceedingly precipitate. The British Government has made a very good road over the Khojak, but like all mountain roads it is narrow and runs a zigzag or serpentine course. Starting at the bottom, the road runs straight for some distance to the point of a ravine. Here it turns, and at an acute angle, and runs back on the side of the mountain to a point immediately above that from which it started. Then it turns again, and runs round and round a hill, making numerous angles and bends till it reaches the summit. The descent is now commenced, and the road runs the same tortuous course between the mountains, making many angles and sharp turns till it reaches the bottom on the other side. The military road which has been made through

the Bolan differs from the one just described in these important particulars—viz., it is wider, not nearly so steep, and much less tortuous. The heat in these passes during the summer months is always most intense.

The valleys are situated about 5,000 feet above the sea-level. They are all new formations, and are most fertile, being composed of rich alluvial soil. All kinds of European plants and vegetables will grow in these valleys, and even Indian plants are occasionally to be seen, but the climate is generally considered unfavourable to their growth. The uncertainty of the rainfall and the comparative scarcity of water seem to be the great difficulties the Afghan agriculturist has to contend with. However, irrigation is carried on here, as in India, very extensively. The process is exactly the same, except that in these valleys "kharezes" take the place of the Indian wells. A "kharez" is an underground aqueduct, or subterranean channel, which is bored in the earth, often 40 feet beneath the surface, and which conveys water from an underground spring arising near the mountains to the fertile plains lower down. Many of these kharezes are three or four miles in length. The average estimated cost of constructing a kharez amounts to 10,000 rupees. They require constant attention and repair, and consequently for this, as well as for the purpose of admitting light and air, numerous openings are made in their construction, which connect the surface above with the channels beneath. Porcupines, wolves, and other animals take refuge in these kharezes. Besides kharezes numerous other springs arise near the foot, or on the sides, of the mountains, and flow down altogether above the surface of the soil. These springs constitute a most important and very valuable piece of property, and hence we find that the Afghans sublet, sell, and mortgage them in the most extraordinary manner. In 1885, when the Murree Brewery Co. came to start a brewery in the Quetta Valley they were obliged to buy up a mortgage and pay a native 12,000 rupees for the right of using his "share" in a spring. Now, as regards the quality of the water found in these valleys, it must be classified in a general way as always "suspicious," and in a great many cases it is very, very "bad." It contains large quantities of the salts of lime and magnesia, as well as marked quantities of organic impurities; consequently it is very unwholesome, and people who are obliged to drink this water in its unfiltered state suffer fearfully from stone and bowel affections—*e.g.*, diarrhœa, dysentery, typhoid

fever, &c. The natives are more disposed to stone in the bladder than Europeans.

General Cause of Unhealthiness.—But however prolific bad water may be in the production of disease, a bad climate is infinitely worse; and indeed the climate of these valleys may be justly regarded as the most unhealthy in our Asiatic possessions. Hence all diseases due to climatic causes are found on this frontier in their worst and most fatal forms. Pernicious ague, malignant cholera, dysentery, abscess of the liver, and inflammation of the lungs, are the scourges of South-Eastern Afghanistan. Few are exempt from their ravages—old and young, weak and strong, are attacked indiscriminately. But it may be here asked in what respect is this climate so injurious to health? The answer is, in extreme variations—excessive heat and excessive cold. In summer there is a temperature of from 80° to 100° in the shade; in winter the temperature often falls to zero, and the mountains all round are covered with snow. In one season the weather is as hot as the hottest months in the Deccan; in another it is as cold as you find it in parts of Russia. Besides, it must be remembered that there is always a tremendous difference between the temperature of the day and that of the night. In the shade this difference varies, as we have seen, from 30° to 40°; in the open the difference is perhaps as much as 100°. During the spring the atmosphere is loaded with moisture, and heavy rainfalls occur. In autumn cold, bitter winds blow from the north, so that men who are obliged to be about during the day have one side of their bodies chilled with cold, while the other is heated by a burning hot sun. Such vicissitudes of climate must, therefore, be most unhealthy, and I will be subsequently able to show that the strongest constitutions are often unable to stand them.

Quetta; detailed Description.—Now, having considered the climate and physical character of this frontier in a general way, we will next take a more detailed survey of the two most important valleys—viz., Quetta and Peshin.

Quetta or "Shall" is situated in latitude 30° 8′ N. and longitude 66° 56′ E. It derives its name from an old fort which stands in the centre of the valley, and which, it is said, was built by the Greeks in the time of Alexander the Great. This valley is about 20 miles long and 12 miles broad. The mountains, which surround it, take a parallel course, and run due north and south. Many springs issue from their bases and supply the "kharezes" or

subterranean aqueducts, already mentioned, with water for irrigation and other purposes. The soil of this valley is for the most part arid and barren, but parts are composed of rich alluvium, and are capable of good cultivation. The valley is quite a new formation, and consequently there are no trees to be seen, except a few fruit trees which have been planted by the Afghans in the neighbourhood of their villages. The fort was occupied by Afghans till the close of the late Afghan war. In 1879 the native population evacuated the fort. Their houses were levelled, and on the space thus cleared an arsenal, a treasury, and an artillery barracks, were erected. At present the fort is surrounded by a broad mud wall and a very deep ditch; it covers about a quarter of a mile square, and in the centre there is a high mound or "moat," on which a couple of pieces of cannon are planted. The cantonment extends a mile to the east and north-east of the fort; it consists principally of old and new barracks, officers' quarters, and native and European hospitals. The old barracks are merely flat-roofed mud huts, about 8 or 10 feet high. The system of ventilation is bad. The floors are made of mud. The roofs are covered with mud, and in wet weather the rain comes pouring through them; consequently the old barracks must be very unhealthy. However, at the present time they are, with few exceptions, occupied by native troops, for whose simple and primitive wants they seem best adapted. A short distance to the north of the old barracks stand the native cavalry lines and barracks; these, as is usual in this country, are built with sun-dried bricks and mud; they are domed buildings, and consist of three parallel blocks. Ventilation is carried on by means of a hole in the top of each dome. They afford accommodation for one native cavalry regiment of full strength. The horses are picketed in the open. These barracks are not by any means as good as should be desired. Lying to the north-east of the fort you see the new infantry barracks, which were built in 1884; they consist of one-storied isolated blocks, placed *en échelon*. There are eight of these blocks, and each has got the necessary appurtenances—viz., cook-houses, wash-houses, and latrines. They are capable of accommodating one European regiment of full strength. They are built, as usual, with sun-dried bricks and mud; the framework, however, is composed of iron girders and rafters, which support a boarded roofing covered with sheet iron. The ventilation is very good, being carried on by means of small openings in the roof and by opposite doors and windows. On the whole, these

are very comfortable barracks, but seem very much better adapted for summer than for winter use. A little to the north of the native cavalry lines stand the "Roberts Barracks," which were built in 1885 for the use of mountain artillery; they consist of three blocks, which are built after the pattern of the new infantry barracks. Lying to the east of the fort stand the hospital buildings; they consist of four blocks, which run parallel; two of these blocks are at present used as married quarters, and as hospitals for the female sick and native troops; the other two constitute what is known as the Station Hospital. There is also a detached block which is appropriated as a medical store; besides these, quarters for native followers, &c., exist. The walls, roofs, and floors of all these buildings are constructed of mud; they were originally built for stables, but after the Afghan war they were converted into their present use; they are low, dark, and dusty, and are proved to be most unhealthy, as cases of typhoid fever and cholera have originated in them; however, they were condemned on the occasion of the Commander-in-Chief's visit to Quetta in November, 1885. A site has been selected and a plan drawn for a new hospital for British troops. This building is now in process of construction, and will be finished in May, 1887. It will occupy a position in the centre of the cantonment, about midway between the old hospitals and the new infantry barracks.

Now, as to the officers' quarters very little need be said. They are built, as usual, with mud and sun-dried bricks, and consist of either flat-roofed huts or domed bungalows. The former are very leaky in wet weather; the latter are in constant danger of tumbling down on the occupants. In January, 1885, the dome of a field-officer's bungalow fell in, and his uniform and accoutrements were buried in a heap of mud and snow.

With regard to the military prisons and guard-rooms, it is necessary to state that in the one the cells are too small and ill-ventilated, and in the other the accommodation is insufficient; and, as a matter of fact, they are very unhealthy. On June 11th, 1885, three prisoners were attacked with cholera in the garrison cells, and men on guard have been found to be more liable to attacks of ague than when otherwise employed.

The Quetta bazaar is situated south of the cantonment. It has grown wonderfully in population during 1884–85. It contains a fruit market and several native shops. European clothes and stores may be purchased, but the prices are most exorbitant.

There are at present but two public buildings in Quetta worth mentioning—viz., the Quetta Club and the Durbar Hall. The club was started in 1879; it has been enlarged and improved year after year since then, and in 1884 a theatre, a library, and a racket-court were added, at a cost of 36,000 rupees. This money, I understand, was raised partly by a grant from Government and partly as a donation from the Khan of Khilet; there was also money contributed from the municipal funds. The club in 1885 had over 100 members; there was an average income of 1,000 rupees per month. The number of club members did not then exceed 100. The Durbar Hall stands close to Bolan road, at the entrance to Quetta. It is a pretty building, with cut-stone facing and a corrugated iron roof. It illustrates one important fact—viz., that cut-stone buildings can be erected in Quetta, as beautiful limestone can be had from the mountains all round.

Peshin; detailed Description.—The fort of Peshin is about 30 miles to the north of Quetta. It derives its name from the valley in which it stands. This valley is bounded on the north-west by the Khojak Amran range and on the south-east by Mount Takatu. It is well watered by the river Lora and by numerous streams and kharezes which run down from the mountains on every side. This valley is more fertile and about three times as large as that of Quetta, being about 36 miles broad and 60 miles long. Numerous villages are to be seen, and these are larger and more populous than any in the Quetta valley. The roads are as yet bad, being but partially constructed. The climate is somewhat similar to that of Quetta, but there is this remarkable difference—Peshin is decidedly colder in winter and warmer in summer. In the shade the average highest temperature is 100° in summer and 40° in winter, whereas the average lowest in summer is 70° and in winter 10°. Here, as in all the other valleys on this frontier, dust-storms are of very common occurrence. These dust-storms are at times so dense that you cannot see through them, and the sun itself is obscured. It is unnecessary to state that the inhabitants are all Afghans; they are for the most part friendly to British rule, and, so far as I have seen, they are most industrious. They grow wheat, barley, rice, and lucerne, with great success in the fields. while in their gardens apricots, peaches, plums, apples, grapes, figs, pomegranates, and walnuts are cultivated to the utmost perfection. Their houses are flat-roofed and built of mud, and a high mud wall usually surrounds every village.

Their women are occasionally to be seen working in the fields. I think, in justice, it may be said of the Afghans that they are a very hardy and independent race; and for my own part I wish to bear personal testimony to the fact that I have experienced great kindness and civility from all of them, and I always preferred an Afghan servant to any other.

Timber is as scarce in this valley as in all the others. An occasional willow or an elm may sometimes be seen in the neighbourhood of villages; but the few trees there are lose their foliage in the winter, and even the grass disappears; so that for six months of the year this and all other valleys in South-Eastern Afghanistan have a bleak, cold, and uninteresting aspect. The Peshin fort stands on a sandy plain in the south-east of the Peshin valley; it is a quadrangular building, surrounded by a high mud-wall, with a turret at each angle; it was built in 1881; it is capable of accommodating one native regiment of full strength. Many of the quarters are built against the mud-wall which surrounds the fort. The system of ventilation is bad, and in 1885 there was a fearful epidemic of sickness amongst the 14th Native Bombay Infantry stationed there; however, the cause of the sickness, I think, was more due to bad water and an exceptionally severe season, than to the very indifferent barracks in which the regiment was quartered.

Besides the fort Peshin boasts of a small bazaar, commissariat stores, and the palatial residence of the Political Agent. A good many young trees have been planted during the last few years, and the grounds are all very tastefully laid out. Just as Quetta stands on the high-road from the Bolan to Kandahar, so Peshin commands the road from the Hurnai to the Khojak Pass. Strategically speaking, these positions are of the utmost importance, but it is decided to build another station, "an entrenched position," close to the Khojak Pass. The site of this station was selected by Sir Robert Sandeman in October, 1885. It will occupy a position in the valley, midway between the present Peshin fort and the village of Goulistan. With regard to the other valleys on this frontier it will be unnecessary for me to describe them, as they are all remarkably alike.

Water Supply.—It may be laid down as a general rule that wherever there is a mountain plateau surrounded by high peaks water will always be found at the base of such a mountain. The winter's snow, which rests on these plateaux, commences to thaw

in April; percolation commences in the meantime, and thus the springs at the bottom are fed by the snow and rain which fall on these mountain plateaux. Four of these mountain plateaux surround the Quetta valley—viz., Takatu, on the north; Chichiltan, on the south; and Murdar and Zarghum on the east. These mountains form a semicircle round Quetta, and the highest peaks vary from 12,000 to 13,000 feet above the sea (Quetta being only 5,500 above the sea-level). They feed several large springs which arise either in the basin of some pass or ravine or else emerge from a fissure in some precipitate rock, where massive layers of stone lie at different angles. From Zarghum a large spring arises and flows down the Hunna Pass to Quetta. From Takatu a spring descends through the Sira Coola Pass, and another gushes from the rocks at Cuchlak and flows on to the Peshin Valley. Smaller springs emerge from the bases of Murdar and Chichiltan; the one supplies most of the drinking-water used in Quetta, while the other has been selected by the Murree Brewery as the best water they could find in these valleys for brewing purposes. Besides the springs mentioned there are numerous others coming from the same mountains, and flowing in different directions. One large and very important spring arises from the solid rock in a place called Siribolan, in Bolan Pass. All these springs are thermal, the average temperature being 60°. They are also remarkable for the large quantity of salts they contain. As much as 6 grs. per gallon of lime and 3 grs. per gallon of magnesia are found in the water obtained from these springs; consequently, they are badly suited for domestic use. I have analysed the club-well water and the Hunna Pass water, and I find that my analyses exactly correspond with those given by the Government analyser, Bombay. They are as follows:—

Club-well Drinking Water.

Chlorine	2	grains per gallon.
H_2SO_4	3·43	„ „
Silica	1·12	„ „
Lime	4·21	„ „
Magnesia	2·38	„ „
Total solids	18·90	„ „
Free ammonia	·05	grains per million.
Albuminoid ammonia	·15	„ „

According to Professor de Chaumont this water must therefore

be classed as "suspicious." However, it is abundantly used by the bazaar people, and the club uses it for every purpose, even for the manufacture of soda water. There can be no doubt but that the spring comes from the base of Mount Murdar, and that it gets contaminated as it approaches Quetta.

The Hunna Pass Water from Zarghum.

Chlorine - - -	1·19	grains per	gallon.
H_2SO_4 - - -	2·52	„	„
Silica - - -	·14	„	„
Lime - - -	1·61	„	„
Magnesia - - -	1·19	„	„
Total solids - -	7·70	„	„
Free ammonia - -	·29	grains per	million.
Albuminoid ammonia -	·14	„	„

Considering the large amount of ammonia present (according to the same author), the Hunna Pass water must be classed as "impure." There are several small country mills and some small villages built on the Hunna stream, and there can be no doubt but that the water is fearfully contaminated by the natives before it reaches Quetta.

With regard to the water supply of Peshin, I have roughly examined it, and find it is very impure. Consequently it may be laid down as a point of fact that the drinking water supplied to the troops serving on this frontier is most dangerous. Wherever there is a spring, there you will find a native village, or camping ground, or graveyard, and these will most certainly contaminate the water as it flows past. However, the remedy for such a nuisance is quite evident, and needs no further remarks from me. I have shown that the climate is bad, that the quarters are bad, and that the water is dangerous. Consequently it may reasonably be inferred that certain diseases must be very prevalent; and we will now turn our attention to the consideration of them.

[*To be continued.*]

ART. XX.—*On an Outbreak of Diphtheria.*[a] By ALBERT MOUILLOT, M.B., Gorey.

AN outbreak of diphtheria which came under my observation last year seems to me to be worth bringing under the notice of the Academy of Medicine as a contribution to the natural history of

[a] Read before the Medical Section of the Academy of Medicine in Ireland, Friday, February 25, 1887.

that disease—particularly as all the cases that recovered have been under my observation ever since the outbreak occurred, and consequently none of the after-effects are likely to have passed unnoticed. On the 12th of December, 1885, there were twenty-four children attending the female and infant school attached to the Gorey Workhouse. All were in good health. On that day the first case was brought to me, and in a short time fourteen of these children, whose ages ranged from three to sixteen years, had diphtheria. In addition to these I had four other cases—one the mother of one of the children; another an infant, whose sister attended the school; a third, a child admitted to the school subsequent to the 12th December, who was seized in seven days after admission; and the fourth, a patient who was a convalescent from typhus, and took the disease in the fever hospital, to which place all the cases were transferred as they occurred.

It would take too long, and be too tedious, to give in detail my notes of these eighteen cases, so I shall content myself with giving an analysis of them; after which I will lay before you what I believe to have been the cause of the outbreak, and conclude with a few observations on the lessons taught me by it.

In three cases—aged five, six, and sixteen—the appearance of the throat was characteristic of diphtheria, and both local and constitutional symptoms were extremely severe. Of these cases one, aged five, died on the tenth day, with laryngeal symptoms; the others recovered without any ill effects. In four cases the false membrane was well developed, though the local symptoms were mild. One of this group, a child, who was attacked while convalescent from typhus, had her larynx involved on the fifth day. The dyspnœa was most distressing. I was anxious to perform tracheotomy, but the mother objected; however, after a severe struggle the child recovered. The three other cases got well; but one, aged four, suffered from ocular paralysis and partial paraplegia for six months. The cervical glands were enlarged in all cases in both these groups. In ten cases the appearance of the pharynx was that of follicular tonsillitis; there was no tendency to the formation of membrane; the tonsils were enlarged and the follicles covered with the usual yellow secretion; in eight of these cases the cervical glands were enlarged. The symptoms were mild, the only complaint being slight soreness of the throat. One of these cases subsequently suffered from paralysis of the palate, and nearly died of inanition in consequence. The remaining case was an infant, thirteen

months old, who was not brought to me until the larynx was involved, and she died in a few hours.

To sum up briefly—out of eighteen cases two died, two had paralysis, and the remaining fourteen recovered without any after ill effects.

I should mention, however, that even in the mildest cases recovery to complete health was very slow. The nurse, who has had twenty years' experience in the fever hospital, remarked one day that she did not understand how it was that though many of the children did not seem "very bad," yet they did not "come round" like those recovering from fever.

The routine treatment I adopted was the tincture of perchloride of iron and a weak gargle of permanganate of potassium. Stimulants were freely given in a few severe cases, and steaming was used in the three cases in which the larynx was involved, with emetics, when required to relieve the dyspnœa. From the time of the commencement of the outbreak I ordered all the children in the school extra diet, and inspected their throats every morning, so as to isolate them as soon as possible.

In order to come to a correct conclusion as to the cause of this unfortunate outbreak it will be necessary to remind you that the school children have very little opportunity of mixing with the outer world, or even with inmates of other classes in the house. I may also add that neither my friend Dr. Weldon nor myself was aware of any cases in the district at the time. The cause must then be looked for within the workhouse walls, and as only children in the female school were affected it is more likely to be found in some insanitary condition affecting them alone than in polluted milk or water, which would probably also have affected the boys' school and infirmary, all being supplied from the same sources.

In a plan of the drains which I prepared it can be seen that immediately behind the girls' school-room and dormitory is a small yard. This yard had long been disused and never opened. It had been quite forgotten that the drain from the wash-house ran through it instead of taking the more direct course to the outlet. The consequence was that the drain had become choked at a place marked X on the plan, and a most sickening odour was emitted from the catchment trap situated immediately under both school-room and dormitory windows. The conclusions I have drawn from the outbreak are as follows:—

In the first place, it shows, almost beyond doubt, that true

diphtheria *can* be caused by foul drains, and can commence *de novo* in consequence of them, for the drainage of the workhouse is quite separate from that of any other building, and I find no record of any cases having been in the house for twenty years. As diphtheria is a specific disease, some authorities doubt the possibility of this; and if it is possible in the case of diphtheria, why not in typhoid fever? though it is extremely difficult to understand why a bad drain odour should produce one disease in one case and differ in another. Some light might be thrown on this subject by considering the nature of the material which the drains are employed to carry away. In this case the drain is mainly used to convey the washing from the laundry, consisting of soap-suds and water. There are no closets in connection with it, but I have no doubt that urine is occasionally thrown into it, and possibly some of the broth used in the house, which contains meat and vegetables. The second important conclusion is that diphtheria *can* be so like ordinary tonsillitis that, without the history of the case as to opportunities of contagion, it would be impossible to distinguish between them. If one of the ten mild cases mentioned had come first under my notice I would have without hesitation admitted her to the infirmary, in which case the disease might have spread much further.

It can hardly be doubted that these mild cases were really diphtheria, as they were produced by the same cause, followed by paralysis in one case, and in all cases by prolonged debility; and, lastly, because none of the children so affected afterwards got more marked diphtheritic symptoms, though placed in the same ward with certainly diphtheritic cases. This point is of great importance to us in practice. My experience will make me very cautious in declaring any inflammatory sore throat as unimportant and non-contagious if it can be traced to defective drainage. It is remarkable, too, that the cases should vary so much in severity when one considers how much alike the children were in their surroundings.

I have now finished my brief record, and must apologise for the want of any observations on the presence or absence of albuminuria. I found it impossible to have each child's urine kept separate, owing to being short-handed in the nursing department.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON INDIAN AND TROPICAL DISEASES.

1. *A Commentary on the Diseases of India.* By NORMAN CHEVERS, C.I.E., M.D., F.R.C.S. Eng.; Deputy Surgeon-General H. M. Indian Army; late Secretary to the Medical Department, Bengal; Principal and Professor of Medicine in the Medical College, and First Physician of the College Hospital, Calcutta; Officiating Inspector-General of Gaols, L. P.; Fellow and formerly President of the Faculty of Medicine of the University of Calcutta; late President of the Epidemiological Society of London. London: J. & A. Churchill. 1886. 8vo. Pp. 816.
2. *Diseases of Tropical Climates: Lectures delivered at the Army Medical School.* By WILLIAM CAMPBELL MACLEAN, M.D., C.B.; Surgeon-General, late of H. M. Indian Army; formerly Member of Senate of the Madras University, Superintendent of the Hyderabad Medical School, and Professor of Military and Clinical Medicine in the Army Medical School, Netley. London and New York: Macmillan & Co. 1886. 12mo. Pp. 340.
3. *A Manual of the Diseases of India, with a Compendium of Diseases generally.* By W. J. MOORE, C.I.E.; Surgeon-General with the Government of Bombay; Hon. Surgeon to the Viceroy of India; previously five years Deputy Surgeon-General H. M. Forces, Presidency Division; Dean of the Faculty, University of Bombay, 1882; President, Bombay Medical and Physical Society, 1881; for some years Surgeon to the Rajpootana Political Agency, and Superintendent-General of Dispensaries and Vaccination in Rajpootana; L.R.C.P. Edin.; M.R.C.S. Eng.; L.S.A. Lond. Second Edition. London: J. & A. Churchill. 1886. 12mo. Pp. 638.

1. NORMAN CHEVERS has passed away since this "Commentary on the Diseases of India" was published. It is not his greatest work. His name will be longest remembered and most honourably known

by his "Medical Jurisprudence in India," especially by the first edition—published in 1855—the two subsequent editions exhibiting that tendency to œdema which so often characterises later editions of excellent text-books. Although, however, we cannot assign to the "Commentary" the highest place amongst the author's writings, we are of opinion that for years to come it will be indispensable, for guidance and for reference, to medical officers practising in India. For these, primarily, the work is intended; and, secondarily, for those who may have to treat, at European ports, sufferers from Indian diseases. It assumes, therefore, as a groundwork, the professional knowledge possessed by a well-educated physician and surgeon, and omits subjects and details with which he may be presumed to be familiar. In one respect the work is defective. Although it professes to treat of diseases of "India," the medical experience and medical literature of the southern part of the peninsula have been very sparingly utilised. With the exception of certain "Topographical Reports," published more than forty years ago, two or three reports of Madras hospitals for 1882, and a few papers contributed by Madras officers to Calcutta periodicals, scarcely any of the abundant material which the Southern Presidency could have supplied has been used.

Before proceeding to notice a few of such subjects as seem likely to be specially interesting to our own readers, we desire to give Dr. Chevers' account of the improvement in the health of European troops serving in India, as shown by diminished death-rate. We have been so often assured by English sanitary authorities that, owing principally to their own exertions, the Indian military death-rate had been reduced from "69 per 1,000" to its present moderate average, that many of us had almost come to believe that the reduction was altogether due to improved sanitary arrangements, urged upon reluctant Indian authorities by an all-wise Army Sanitary Commission, sitting and minute-writing in London. We are far from under-rating the effect of improvements carried out during the last thirty years in the sanitary circumstances of the British soldier in India, but nothing is gained by the ridiculous exaggeration of attributing a reduction of mortality, to the extent of 50 per 1,000, to better barracks, better food, better clothing, and better care. We give Dr. Chevers' figures, and italicise his statement of what was unquestionably the chief factor in the abnormal death-rate of the earlier years of the century. In 1858 "the average annual rate of mortality in hos-

pital from all causes among the men of H.M. and H.E.I.C.'s European forces in the three Presidencies of India had been 62·45 in the thousand" from the beginning of the century. In 1881 the death-rate was 16·86; in 1882, 12·07; in 1883, 10·88.

"In comparing these rates with those given as prevailing shortly before the great Mutiny of 1857, it is to be borne in mind that *the early rates belong to a period in which the health of the troops suffered greatly in war, and from all the destructive influences attendant upon field-service in an enemy's country.* The hitherto unexampled lightness of the death-rates of 1882 and 1883—viz., 12·07 and 10·88—is in a large measure attributable to the remarkable abeyance of cholera among the European troops."—(P. 3.)

Eighteen pages are devoted to enteric fever—mainly to a discussion of the questions, "Is true enteric fever of old standing or of recent origin in India?" and "To what extent does it now prevail in that country?" The earlier Indian medical writers, most of them ship surgeons, the predecessors of Annesley and Twining, had little experience of fevers occurring in India except in the ports where they resided in the intervals of their voyages; but even in their works are found allusions to enteric fever, under the name of typhus, or other fever, with bowel complication. Twining, who wrote in 1835, unquestionably had met with cases of true enteric in Bengal, and Maclean saw it in Madras in 1838. It was only, however, in 1870 that the disease obtained admission into the medical statistical returns of the British army, in consequence of a paper of Dr. Bryden's, in which he maintained that enteric fever had long prevailed among European troops in India, especially among young soldiers, so that it was the principal cause of mortality in this class. He attributed the disease, we must add, not to pythogenic but to climatic origin. Subsequently he showed that the disease had been found among native soldiers and native convicts. Medical officers were not slow to avail themselves of the improvement in classification; and, in the six years—1871–6—the statistics of the European army in India showed 1,311 cases of enteric fever and 571 deaths, in an average annual strength of 58,670 men; and 57 cases, with 31 deaths, in a strength of 6,445 women. These, however, are only figures. Surgeon-General Gordon asserted, and our author agrees with him, that these 571 men and 31 women did *not* die of true enteric fever; that Dr. Gordon, sitting in his office, knew the nature of the cases better than the medical officers who saw them, diagnosticated them,

and treated them. Our sympathies, we confess, are with the *mundus* rather than with the medical *Athanasius*.

There is reason to believe that enteric fever was, until recently, rare in India. Dr. Morehead, in 1856, after long experience in Bombay (during which it was his practice to examine the entire intestinal tract when opportunities of autopsy were afforded), had met but one case which "closely resembled" the disease; and, with that amusing tendency to generalisation which we sometimes find in Anglo-Indians, he did not then believe that it existed "in India." Other similar evidence is adduced by Dr. Chevers in support of the view that enteric fever *was* rare in India, and that its increase, at least in the civil population, has been slow. It is important to notice that when the author left Calcutta in 1876, there prevailed a "general impression" among the physicians of that city that the disease was increasing there, coincidently with the extension of a system of closed sewers. This remark leads to the ætiology of enteric fever, which we have not space to discuss. Our author was of opinion (p. 136) that "filth only acts as an *exciting* cause." The old question whether fæcal emanations are in themselves capable of originating the disease has in recent years given way to another—Are climatic or malarial conditions, or both combined, competent to produce, without pythogenic aid, a disease indistinguishable in symptoms, in pathology, and in results of treatment from the true enteric fever of Jenner? We have in mind certain American cases which seem to favour an affirmative reply. In India the inquiry is more difficult, owing to the impossibility of excluding the pythogenic element. It is simply ridiculous to argue that a young soldier, whatever his symptoms, *cannot* be suffering from enteric fever because his barracks are hygienically faultless. Hear Dr. Chevers:—

"I think it may be fairly inquired—Is there any bazaar in India, accessible to European soldiers, in which a thirsty man is not likely to obtain a draught of filth-impregnated water? Nay, more, is there any such place, out of the Presidency towns (where the municipal water supplies are good), in which there is the slightest hope of obtaining a draught of perfectly unexceptionable water?"—(P. 137.)

That which we agree to call "malaria" is the cause of more deaths in India than any other agent—cholera or variola not excepted; and in works on Indian medicine it never fails to occupy a most conspicuous position. It is so here. To almost every one who has practised in the East or in the West the confession of

faith with which the section devoted to this subject opens will seem like a solemn expression of a conviction that two and two make four. "I have lived and practised," says the author, "and shall probably die firm in the belief that intermittents and remittents are caused by a specific poison or morbific entity which emanates from certain soils." We can remember when a Scottish physician, with a reputation for considerable learning, stoutly maintained—and was allowed to maintain in the columns of a leading medical periodical—that no one ever had heard, and that no one could hear, the heart-sounds of the *fœtus in utero*. In like manner, "my friends Drs. Oldham and Lyons and others," deny the existence of malaria, attributing its effects to "chills and damp, and sudden and great variations of temperature;" and a protest, more solemn than the case requires, against such views was deemed necessary. What the "morbific entity" may be we do not learn; and the *Bacillus malariæ* is dismissed in a few lines, without judgment. Dr. Oldham's chills, &c., are merely exciting causes. The quaint opinion is expressed that "we ought to possess a work on medicine in which each disease is commented on by physicians who have been themselves its victims;" and accordingly the chapter on intermittent fever is a running commentary on the author's own case. *Experto crede* might be its motto. Born and reared in a malarious district in England, he practised for twelve years in "originally paludal localities" in London, Beginning his Indian career with dysentery, after a few months he went to Chittagong, where he enjoyed ample opportunities of the closest study of Bengal intermittent, in himself and in the members of his family. After 18 years' Indian service his Chittagong tertian attacked him savagely at Cheltenham; and malarious asthma, acquired in the same station, returned nearly every cold season of twenty-seven years' service in India. He was fully qualified, therefore, according to his own standard, to write this chapter on malarious disease. The latter part is occupied with further discussion on enteric fever and its differential diagnosis from malarial remittent.

We are not careful to follow our author in his arguments in favour of the view that cholera is a "pernicious fever." It is important chiefly for the inference deduced from the theory. "If we accept the opinion that cholera is a pernicious fever, we must not expect to find that it is either contagious, as small-pox is, or that it is propagated from individual to individual, as a specific

poison, as syphilis is" (p. 282). From this sentence it will be seen that Dr. Chevers, in spite of his claim to be considered merely "an agnostic, with a strong anti-propagationist impression," shared the views of Cuningham and some others as to the communicability of cholera. As to the difference of opinion between high authorities upon this question, he makes a shrewd remark, which may not improbably give the key to an explanation of a perplexing fact:—

"I have generally noticed that those of my most experienced brother-officers who have been propagationists have made their observations chiefly in the epidemic field of cholera in Upper India, while the anti-propagationists have generally practised in the endemic area of Bengal Proper—a very large proportion of those whose observations have been restricted to the cholera epidemics of Europe being propagationists; it therefore stands as a fair question—Is or is not epidemic cholera propagated by the dejecta, while the endemic disease of Lower Bengal is not?"—(P. 287.)

Adding, however, in the same paragraph—

"I have never seen or heard anything which, upon close investigation, shakes my firm impression that a specific cholera poison is not contained in the stools."

However, in spite of strong bias—in a wrong direction, as it seems to us—the forty-five pages devoted to cholera in these "Commentaries" will be studied with advantage, not merely by the physician in India (where, in 1879, 270,552 of 4,975,042 registered deaths—5·4 per cent.—were due to cholera), but also, in present circumstances, to ourselves.

Leprosy, though an important subject to the young officer, who has probably never seen a case before he lands in India, is very summarily dismissed. Figures to show its prevalence are given only for the North-west Provinces (18,000 in 33,000,000, in 1881), and for Bengal (8·15 per 10,000). We must take exception to the statement that "it is scarcely proved that it can attack Europeans." Knowing how widely leprosy once prevailed in these islands, that there are now more than 2,000 lepers in Norway, and that Italy, Spain, and Cyprus afford ample illustration of the liability of Europeans to the disease, we should, *à priori*, have doubted the immunity of Europeans in India. As a matter of fact, they are not exempt. The "Madras medical officer" mentioned by Dr. Chevers *was*, and was not merely "said to be"

leprous; and we know of two other cases—one of them under the care of the writer of this notice—in which there could be no doubt either of the existence of the disease or of the purely European descent of the sufferers. We may add that it is not true of the Southern Presidency that "in India, many of the fairest 'European' aristocrats are descended from native ancestors."

In the chapter on Diseases of the Respiratory Organs will be found some interesting facts showing the occasional prevalence in Northern India of epidemic pneumonia, believed to be distinct from the croupous pneumonia of Europe, and contagious. In an outbreak of this disease at Dera Ismael Khan, in 1882, a specific micro-organism was found in the blood and sputa:—"These organisms were similar in all the cases in which they were looked for; and when the sputa containing these was injected into rabbits, they, too, were attacked by pleuro-pneumonia, to which they succumbed, and the blood, pleuritic effusions, and lungs of the rabbits were found to be crowded with similar organisms." In the same chapter the author gives the results of his experience with regard to phthisis. He formed the opinion that a member of a phthisical family, living carefully with healthy lungs, in Lower Bengal, will never be attacked with phthisis. A person, however, with phthisical predisposition, is (according to Ewart) specially liable to dysentery. He condemns the idea, not yet exploded, though less prevalent than it was, that sufferers from phthisis are likely to recover in India; and he endorses Ewart's conclusions—

"That the hill sanitaria of India are beneficial to persons afflicted with scrofula only; that they are useful in the summer heat (*a*) in uncomplicated and simple tubercular consolidation, (*b*) in tubercular affection in which previous inflammation of the adjacent lung and the bronchial mucous membrane has subsided, and (*c*) where this is proceeding in the direction of repair by absorption, cicatrisation, or cretification; and that they are injurious, probably at all seasons, but in an aggravated degree in the cold season and rains, to all cases of active and advancing pulmonary consumption."

To those who appreciate the enormous extent of "India," and the variety of "peoples, nations, and languages" which inhabit it, the differences in the prevalence of calculous disease will not seem surprising. In these countries similar differences are observed, and generally attributed to the qualities of the water-supply. In India the presence or absence of stone appears to be related to

the staple food of the people. In Burmah, where the people live mainly on rice, vesical calculus is unknown. The same food and the same immunity are found in Lower Bengal. In Bombay and Berar the disease is rare; in Madras, where rice and millets form the food of the people, it is almost unknown,[a] although in some districts the drinking-water is heavily charged with lime. From these and like facts Dr. Chevers deduces a law that "rice-eating native peoples who inhabit the maritime face of India are exempt from stone." On the other hand, stone is common where the people feed on wheat.

The curious in obstetrical lore should read the quotation (p. 746) from an Indian periodical, describing midwifery practice in Burmah. Our limits forbid its transfer to our pages; and, indeed, a similar description was printed in a recent number of the *British Medical Journal*. We fear that we may have already devoted too much space to a work which, unquestionably useful, and the fruit of wide experience and industrious compilation, yet cannot be called a *great* work, or one which will retain for long its present position as an indispensable component of the Indian practitioner's medical library.

2. Dr. Maclean is with us still, enjoying honourable, honoured, and well-earned retirement; and we may hope, now that the trammels of his official position are removed, that he will favour the profession with the stores of his unrivalled experience in India and at Netley. The present volume—a brief summary of his "Lectures on Tropical Medicine"—is, we trust, only a prelude to a systematic work on Indian diseases—

> "That which he has done but earnest of the things that he shall do."

In the introductory lecture we find (p. 17) some figures which show the absolute mortality in the European army serving in India in 1871, and the relative fatality of the diseases which chiefly contributed to the destruction of life. 1871 was the first

[a] In our own professional experience in Southern India, during nearly five-and-twenty years, we met but one case of vesical calculus; which, on account of its ætiology, is worth mentioning. A native woman, suffering from vesico-vaginal fistula, applied for relief to a native midwife, who undertook to cure her. She "operated," and the dribbling of urine into the vagina ceased for a time, and then recurred. The patient came to hospital with her fistula open and a good-sized stone in her bladder. The stone was extracted through the fistula, enlarged, which was then pared and closed. The nucleus of the stone was a plug of wood, which had been inserted in the fistula, and which, after serving its purpose for a while, had slipped into the bladder.

year in which "the Sanitary Commissioner with the Government of India was able to include in his Report the statistics for all India." Of a strength of 56,806 996 died—17·53 per 1,000—the lowest death-rate up to that time attained. Of the 996 deaths 155 were attributed to liver diseases, 99 to malarious fevers, 96 to diseases of the heart and blood-vessels, 92 to enteric fever, 87 to phthisis, 76 to dysentery, 62 to cholera, 39 to insolation, 21 to pneumonia. Malaria ranks second as a cause of European military mortality, and its importance as a source of disease is further shown by the fact that in the same year there were 21,174 admissions for intermittent fever and 1,648 for remittent. Again, in that year, in the Madras Presidency, 192,469 deaths in the civil population were attributable to malarious fevers. What is malaria? is a question, therefore, of immense importance, and one to which we fear a satisfactory answer has not yet been found. The *Bacillus malariæ* of Italian observers or Salisbury's *Palmella* has been sought for in India in vain :—"Malarial fevers abound where no such vegetable forms are to be found." As to Dr. Oldham's "chill" theory, it scarcely deserves the elaborate refutation with which our author honours it. We are reminded of a dead leopard which we once saw, which had been killed by an eccentric artillery officer with a nine-pounder.

"If," says Dr. Maclean, "chill will account for the loss of 10,000 men at Walcheren, for the frightful disaster of a like kind at Carthagena, for the terrible mortality from paroxysmal fevers at the Mauritius, and countless examples of the same kind elsewhere, and for the yearly loss of life in India from fevers—the country in which Dr. Oldham serves—why, seeing that mankind are exposed to 'chill' everywhere, are not such fevers, with their sequels, universal in their prevalence, instead of being confined to places under one or other of the conditions described in this article? Why, above all, in a country like Great Britain, where vast multitudes of the population are hourly exposed to every variety of atmospheric change, have paroxysmal fevers, once endemic there, disappeared, save in such exceptional places as are still under one or other of the conditions described?"—(P. 34.)

In the lecture on remittent fever two points deserve special notice—the hypodermic use of quinine and the efficacy of Warburg's tincture. Quinine hypodermically administered is more than twice as potent as when taken *per os*, but a solution prepared in the ordinary way is apt to produce troublesome ulceration and unsightly scars. Even tetanus has been known to follow its injec-

tion. Dr. Maclean found that a drachm of water alone, slightly heated, will dissolve five or six grains of the "neutral sulphate," which was equally successful as an antipyretic, and that no irritation ensued. Warburg's tincture has long since ceased, through Dr. Maclean's persuasion, to be a secret remedy; the formula for its preparation is given in the Appendix. Its effect upon malarial fevers, as described here and by other physicians who have used it, is marvellous. In the following lecture the remarks on the ætiology of enteric fever should be noted. Disclaiming any intention of asserting that the disease in India invariably or necessarily has a pythogenic origin, Dr. Maclean points out that decomposing nitrogenous matter—the generating cause of enteric fever recognised by most European authorities—abounds in Indian soils, however clean superficially; and that soldiers have easy access to villages built on ground sodden with the filth of centuries, where air and food and water are laden with organic impurities. It is a recent experience that officers and men were attacked with enteric fever in the Soudan desert:—

"I can conceive it possible that, in an uncertain proportion of cases, the sufferers contracted the disease in one or other of the places named [Cairo, &c.], although it did not develop itself until they were far from the spot where the contagium was taken into the system. Again, knowing, as I do, the rapidity with which, even in desert places, insanitary conditions are established in camps that occupy a fixed position for even a short time, I can conceive it possible, and even probable, that some cases might be traced to a cause generated in this way, and once a zymotic element is introduced into a camp, even by a few cases, it is not difficult to account for the spread of the disease. I do not, however, wish to dogmatise on this, I admit, difficult question; we must await the result of more light and careful study and experience. I have always held that enteric fever can arise *de novo*, and the examples given strongly support that hypothesis; and while it will be seen that I am much impressed by the part filth plays in the genesis of enteric fever in tropical climates, as well as at home, I admit to the fullest extent the influence of climate, malaria, and, it may be, other yet unknown factors in modifying the symptoms, temperature-curve, course and direction of the fever, as well as the lesions found after death. Above all, I warn you that while purely typical cases of enteric fever will be seen in tropical and malarial climates, many will present more or less of that mixed character on which American physicians have insisted so much."—(P. 84).

The range of yellow fever is so restricted—albeit wider than is

generally supposed—that we shall notice Dr. Maclean's lecture on the subject (VII.) no further than by saying that he accepts Auduard's explanation of its nature and origin. It is a peculiar form of typhus, due to the fæcal discharges of dysenteric negroes crowded together in the slave ships. The specific poison has become fixed in the soil of certain ports—as, for instance, Vera Cruz—permanently, it is to be feared; but elsewhere it ceased with the suppression of the slave trade, or is being eradicated by sanitary measures.

We studied with much interest and pleasure the twelfth and thirteenth lectures, on Cholera. The history of the disease is briefly but clearly summarised. The belief that it made its first appearance in 1817, in the Marquis of Hastings' camp in Bundelcund, when 9,000 men died of it—5,000 in five days—has, of course, long since been exploded; but to many it will be a surprise to learn that a disease indistinguishable from true Asiatic cholera was known in Europe in the 16th century, and onwards; and that Van der Heyden, in 1643, described it accurately under the name of *Trousse Gallant.* Of its ætiology, Dr. Maclean frankly admits his ignorance; but of this he is "quite sure—it can never be answered by merely official authority; by throwing cold water on the opinions of those, whether right or wrong, who are seeking after truth, sneering at and snubbing, and in every way discouraging men who dare to hold opinions that do not square with those which happen . . . . . to find favour with those in positions of medical or other authority. Something too much of this we have seen of late years." He does, perhaps, less than justice to Koch's bacillus; and, perhaps, more to the late Dr. Lewis's salivary masquerader. Pettenkofer's theory is reviewed and rejected.

As to the spread of the disease, Bryden's "earth-born and air-borne" theory is weighed in the balance and found wanting. Bryden assigned to human intercourse, or to anything but moist winds, an altogether insignificant part in the propagation; and the most prominent and, from his official position, the most mischievous, advocate of this pernicious view is Dr. James Cuningham, late Sanitary Commissioner, and later Surgeon-General with the Government of India. Mr. Ruskin has informed the world that he is never sure that he is quite right on any point until he has changed his opinion twice at least. Let us hope that Dr. Cuningham's second change of view, restoring him to rationality, may

yet arrive. In 1867 he taught us "no doubtful lesson," learned from the epidemic of that year, "that human intercourse plays a very great part in the diffusion of the disease." In 1881 the same oracle proclaims that "the experience of fairs and other gatherings in this country has again and again testified to the truth of the conclusion that cholera is not carried by persons from one locality to another, so as to cause persons, not exposed to the necessary local influences, to become affected by the disease."

Dr. Maclean summarises his views on cholera in fourteen propositions, which we ourselves accept. For our present purpose it is sufficient to emphasise these facts:—That the stools of cholera patients (not fresh, but after undergoing certain unknown changes) contain a specific, infective poison, capable of communicating the disease by air, food, water, or clothing; that bodies of men can carry the disease with them, dispersing it as they go, communicating infective properties to the ground on which they camp; and that where cholera breaks out at sea the outbreak will be found to be the result of opening cargo or baggage which had been shipped at an infected place.

We shall conclude our notice of Dr. Maclean's Lectures with an extract from his "Farewell Address at Netley," which is a reply to the charge which had been made against the Professors of the Army Medical School of withholding from the profession the valuable results of Netley Hospital experience. The explanation is amusingly characteristic of the relations still subsisting—"in this so-called nineteenth century"—between the warriors and those whom they delight to call "non-combatants." When first appointed to his chair he occasionally published lectures; but—

"An epidemic of yellow-fever broke out in an important station in the yellow-fever zone, attended with a lamentable mortality. A graphic narrative of this outbreak, and all the circumstances preceding and attending it, was published in the following year by the principal medical officer, who had been hurriedly sent to the scene of the epidemic. This was published in the Official Departmental Blue Book.

"In this outbreak 14 officers out of 30, nearly 50 per cent., died; 4 out of 6 medical officers, one of whom had just left this school, lost their lives; and out of 290 men attacked 107 died. That this lamentable loss of life, which took place between the 5th and 15th September, 1864, was due to causes distinctly preventable has never been disputed by any competent authority. This epidemic, as it was my duty to show in this lecture-room, did not come upon its victims without giving ample notice

of its approach, and time for providing for the safety of the troops. Warning of the coming danger was given by competent medical authority, which warning was neglected until the day of grace was past. Here was an opportunity of teaching an impressive lesson in military medicine, by example. Accordingly, I made the narrative the 'text,' as it were, of a lecture, which, after delivering it here, I published. I did not invent the facts. I took them as I found them in a published official document. I only 'pointed the moral' of a 'tale' told by another, an eye-witness. I do not pretend that the commentary was flattering to those concerned, but it did not go beyond what the case demanded, if any lesson was to be taught from the facts.

"No sooner did this lecture appear than a great storm burst on my head. So far as I was able to gather, the local authorities did not dispute the facts; they were angry at the publicity given to them. General Peel, then Secretary for War, was appealed to by those who felt themselves aggrieved—mostly, I believe, the municipal authorities of the place. My lecture, by the War Minister's desire, was submitted to his inspection. The judgment of this high authority, to whom alone I was responsible, was that he had no fault to find with it. At the same time, with a view, I presume, to prevent similar disturbances and complaints in the time to come, the Secretary for War was pleased to direct that in future all lectures delivered here should be submitted to him before publication. From that time to the present no lectures delivered in the Army Medical School by any of the professors have been published, with the exception of merely formal addresses delivered at the opening of the sessions, and then only for private circulation."

3. Relapse, in books, is generally a sign of healthy constitution, and Surgeon-General Moore's "Manual" is in its second edition. The appearance of Dr. Chevers' work has, to some extent, destroyed the *raison d'être* of Mr. Moore's—for one of the reasons given in the preface for the existence of this volume is that "some time has . . . passed since the publication of any work specially devoted to Indian diseases." It belongs to a class of books which we confess we do not regard with much favour—books which profess to compress *omne scibile* of an extensive subject into a duodecimo; but we do not deny that this one, "adapted to the trunk, the cabin, the tent, and the march," may occasionally be useful to a lightly-equipped Indian practitioner. We speak of the main body of the work; the 60 pages of Appendix, offering a compendium of diseases generally, though well executed, might have been omitted without seriously impairing the value of the manual. The arrangement is convenient. There are thirty-five

chapters, each devoted to one disease or group of diseases, in alphabetical order. We propose to notice briefly three of these chapters—those on Cholera, Fever, and Leprosy—in order to make our readers acquainted with the opinions held on these subjects by another Indian officer of ability and experience wide and varied.

Cholera occupies 69 pages. Mr. Moore appears to favour the idea of a connection between this disease and malaria, but it is not easy to extricate his own opinion from his statement of the others' opinions, *pro* and *contra*. He is decided against Pettenkofer and his ground-water. On fungoid ætiology he asserts that "Lewis and Cuningham, in India in 1870–74, proved the non-existence of any specific cell, or other body peculiar to cholera, and not found in other dejecta." He considers that Klein and Gibbs refuted Koch and his comma-bacillus; and accepts the conclusion of "a commission" subsequently appointed, that similar bacilli are present in the intestines in ordinary health, that their development is favoured by hyper-secretion, that "the bacilli ordinarily found in cholera do not induce the disease in the lower animals, and that there are no real grounds for assuming they do so in man." As to propagation of cholera in many instances, in Mr. Moore's experience, "the conveyance of the disease by human intercourse appeared as certain as the exact sciences. The fact of people going from one house or one village where cholera prevailed, their arrival in another house or village being immediately followed by cholera in themselves or others, *cannot* be ignored." The infective poison is conveyed by water, by food, by clothing, by merchandise. Mr. Moore does not believe that Bengal is the special birthplace of cholera; it may arise *de novo*, under favouring conditions, in any country. The belief that it spreads definitely from east to west is erroneous, "arising from false reasoning on the fact of cholera epidemics being more frequent in the East." Quarantine and fumigation are useless precautions.

The chapter on Fever is long and miscellaneous, including diseases which have nothing in common but part of their names. Dr. Moore does not believe in malaria. He agrees "with Dr. Oldham in attributing the origin of ordinary febrile conditions to chill and its consequences," but for severer types of fever he demands the aid of "something in the nature of a ptomaine." He enumerates a "goodly company" of writers who "have cast off the thraldom" of malaria, amongst them Surgeon-General Gordon,

C.B., who, having written down enteric fever in India, has, it seems, helped to abolish malaria too. Dr. Moore is unable to diagnosticate remittent fever from enteric "except in typical cases." The latter may arise from various causes; "the origin of typhoid fever as held in Europe is not applicable to typhoid in India." We have the argument quoted with implied approval that soldiers cannot incur enteric fever from fæcal contaminations because their barracks are clean. Typhus is admitted into Indian nosology. "The protection against fevers of all descriptions" is "protection of the person from chills."—*Risum teneatis, amici?*

Our own experience as to the occasional existence of leprosy in European subjects in Madras is confirmed by Mr. Moore's observations in the Western Presidency. As to transmission of the disease by heredity we learn that there is much difference of opinion, and the differers are cited; but no judgment is pronounced. The author holds that leprosy is not communicated by infection; propagation takes place by contagion through the abraded skin. He does not accept the *Bacillus lepræ* as the infecting agent, and he accepts Carter's view that this bacillus and the bacillus of tubercle are identical.

The Hamilton Association for Providing Trained Male Nurses: The Annual Report and Balance Sheet, and Report of the Annual Meeting. London. 1886. Pp. 72.

The Hamilton Association was founded in 1885 with the object of providing trained male nurses as attendants on male patients in hospitals and infirmaries, on male residents in chambers, and on male members of private families, in order that female nurses might be spared from painful scenes and duties for which they are unfitted on account of decorum or of inferior physical strength. As up to the present only fifteen engagements have terminated, it is too early to judge of the practical working of the Association, but the rules appear to have been very carefully drawn up, and if there proves to be a real need for male trained nurses, the Hamilton Association will probably be found to successfully supply the want.

PART III.

HALF-YEARLY REPORTS.

REPORT ON SURGERY.

By William Thomson, M.A., F.R.C.S.; Surgeon to the Richmond Hospital, Dublin; General Secretary to the Academy of Medicine in Ireland.

RUPTURE OF THE BLADDER.

To Sir William MacCormac, of St. Thomas's Hospital, London (*Lancet*, Dec. 11, 1886, p. 1118), belongs the marked distinction of being the first surgeon who has successfully sutured the ruptured bladder. Curiously enough, his two cases—both of which recovered—occurred within about two months of each other, that is, on the 22nd of September and the 17th of November, 1886. The operation of opening the abdomen and suturing the rent in the bladder in such cases has been done many times, but until the present, so far as we know, always with a fatal result. In MacCormac's first case the patient—whom the reporter had an opportunity of seeing immediately after the operation, and also when he was convalescent—ran full tilt against an upright post at the entrance of a court. He was struck about the umbilicus. He fell to the ground, but was soon able to rise and walk to his house, a distance of 250 yards. Half an hour later he felt a desire to micturate, but he failed to pass water. Next day he walked to hospital, a distance of one mile. There never was any collapse. The abdomen was now found distended and tender all over, especially in the epigastrium and flanks, and in the latter regions there was much dulness. An ounce and a half of urine was drawn off. Later on the patient was seen by Sir W. MacCormac, who drew off 95 ounces of red-coloured fluid. The instrument did not move freely, showing the bladder to be contracted. Rupture of the bladder was diagnosticated, and operation was at once determined upon. On opening the abdomen the bladder was

found empty and firmly contracted. There was no urinary smell. The rent was in the posterior aspect of the bladder, and extended from the superior fundus to the recto-vesical *cul-de-sac ;* it was median and vertical, and nearly four inches in length. The edges were irregular and thickened. So deeply did the rupture extend into the pelvis that great difficulty was afterwards experienced in the introduction of the deeper sutures. To facilitate this the parietal peritoneum was divided transversely on each side, and it was then found possible to draw the bladder much further out. Sixteen sutures of fine silk were introduced by Lembert's method, including the serous and muscular coats only, at intervals of a quarter of an inch apart. The bladder was now twice moderately distended with a weak solution of boric acid, injected through the catheter, and proved perfectly water-tight. The peritoneal cavity was irrigated with two gallons of a one per cent. solution of boric acid dissolved in water previously boiled and cooled down to 98°. The fluid was introduced by means of a tube attached to an irrigating-can raised 8 feet from the floor. A drainage-tube was introduced into the recto-vesical *cul-de-sac*, and a soft black catheter into the bladder. Carbolic spray was used. The patient was able to leave bed in three weeks, and he left hospital and resumed work shortly afterwards.

In the second case the patient, a slater, aged thirty-seven, had fallen twenty feet in a sitting posture on some soft clay. He did not faint, and did not consider himself seriously hurt. He had a desire to pass water, tried, and failed, and then the desire left. He drove to the hospital and walked in with assistance. He was able to move about, and complained of no abdominal pain or weakness, and a catheter was not passed. He had passed water an hour before the accident. He was sent home, but pain in the abdomen and desire to micturate followed, and he was sent back to hospital next morning. Six ounces of coffee-coloured urine were now withdrawn. At 2 30 p.m. he was operated upon by abdominal section, and 50 ounces of serum and urine escaped. An irregular, obliquely-placed rent in the bladder was found situated at the upper and posterior part and slightly to the left of the middle line; it was more extensive in the outer than the inner wall, measuring 2 inches in length where the peritoneal covering and muscular coat were ruptured, and a quarter of an inch where the internal coat was torn. Twelve sutures were introduced. The same general treatment as in the last case was carried out,

and the patient was allowed to sit up on the twelfth day. He recovered.

In one of these cases about nineteen and in the other twenty-six hours had elapsed before operation, and although the abdominal cavity was flooded with urine there was no sign of peritonitis. The author of this most valuable paper recommends in these cases the necessity of an earlier interference and bolder practice.

LITHOLAPAXY.

The treatment of stone in the bladder by Bigelow's method has received a great impetus by the concurrent reports of two surgeons in the Indian army—Surgeon Freyer, M.A., M.D., and Brigade-Surgeon Keegan, M.D. Both gentlemen are Irishmen—one being a graduate of the Queen's University, the other of the University of Dublin. The work which they have done is of a very high order.

Dr. Freyer's work has already been referred to in this Journal. He has now published his writings in more permanent form. Up to October 26, 1884, he had operated on 126 individuals, with five deaths. The average of days spent in hospital was 8·5. The male patients operated on varied from puberty to 96 years, the average being 47½ years. In addition he had previously performed lateral lithotomy on 47 adult males, with nine deaths; and on 143 male children, and amongst these last there was no death. It will be seen, therefore, that Dr. Freyer has had ample experience of stone operations, and his decided preference for litholapaxy has corresponding importance.

Dr. Freyer calls attention to what he claims to be a new method of diagnosis in the case of small calculi. He says, speaking of a particular case in which no stone could be found—"I felt certain, however, from the symptoms that there was a small stone present, and determined to employ the aspirator for the purpose of diagnosis. I introduced a No. 14 catheter and applied the aspirator. After going through the performance of pumping water into the bladder, and exhausting it once or twice, a distinct click was heard. The canula was withdrawn, the lithotrite introduced, and the stone crushed. The fragments weighed 11 grains only. Next day the man was walking about quite well."

This plan has certainly been employed before in determining the presence of fragments after a crushing, but Dr. Freyer has emphasised its use as a definite proceeding in searching for calculi.

Mr. Harrison, of Liverpool, says he has adopted it successfully in some twelve cases.

Surgeon-Major Keegan (*Lancet*, Dec. 4, 1886, p. 1069), in a series of papers, treats of the same method, more particularly as applied to young male children. He is generous in ascribing the idea originally to Deputy-Surgeon-General Beaumont, although Dr. Keegan was the first to put that idea into practice. From Dec., 1881, to March, 1886, 58 boys were operated upon, of whom only one died. All but 11 of these cases were under Dr. Keegan's personal care. The ages varied from $1\frac{3}{4}$ to 14 years. With regard to the objections raised to lithotrity, or litholapaxy, because of the smallness of a child's urethra, the author points out that "the urethra of a boy from 3 to 6 years of age will admit a No. 7 or a No. 8 lithotrite (English scale), and that the urethra of a boy of 8 or 10 years will admit a No. 10, a No. 11, and even sometimes a No. 14 lithotrite. With a No. 8 lithotrite and No. 8 evacuating catheter it is, I find, quite feasible to crush and dispose of a mulberry calculus, weighing between 200 and 300 grains, in an hour's time." Of course, in these cases the orifice must be incised. Altogether the experiences of these two gentlemen ought to be known to every one who has to do with stone cases.

SUPRA-PUBIC CYSTOTOMY.

The opening of the bladder in the supra-pubic region for the removal of tumours and calculi is fast becoming a fashionable operation. Sir Henry Thompson's papers have done much to bring it into favour, and undoubtedly its safety has been much increased by the newly-devised aids for raising the anterior peritoneal reflection to a higher level and out of harm's way.

Mr. R. W. Parker (*Lancet*, July 3, 1886) records a case in which he removed a stone by this means from a child aged three. The wound in the bladder was closed with chromicised gut, and the patient was discharged well 16 days after operation. In a former case the bladder wound did not close immediately. He attributes failure to the presence of a catheter in the urethra. He believes success is to be attained by a judicious use of sedatives and by abstaining from all interference with the bladder. Mr. Parker thinks this is the first instance of primary union, but Dr. L. S. Pilcher, in the *Annals of Surgery*, Feb., 1886, records a case of primary union also; and three cases are published in the *Deutsche Centralblatt für Chirurgie*. Schmitz, in *Langenbeck's*

Archiv., Vol. XXXIII., 1886, has collected 57 cases of suture, with a mortality of 14·8 per cent. In 17 cases there was primary union.—(MacCormac, *Brit. Med. Jour.*, March 12, 1887.)

Mr. Thomas Smith reports a case (*Lancet*, Aug. 7, 1886) in which he removed a stone weighing 24½ ounces, measuring 13 inches in its largest and 2½ inches in its smallest circumference. Several sutures were introduced into the bladder wall and a small space was left for a catheter, which passed out through the urethra. The patient was able to leave his bed in three weeks, but, a fistula remaining, it was found necessary to operate on this later on. The patient recovered. It is probable that this is the largest stone that has ever been extracted during life, and followed by complete recovery. Larger stones have been removed, but with fatal results.

Sir W. MacCormac (*Lancet*, Sept. 25, 1886) removed a stone by the supra-pubic method from a boy aged seven years and a half. The bladder was sutured, and united without further trouble. The patient left hospital on the 26th day after operation.

Those who desire to consult a most comprehensive paper on the whole subject may refer to the *British Medical Journal* of March 12, 1887, where an admirable paper by Sir William MacCormac is published. With regard to the comparative merits of artificially distending the rectum and the bladder, or the bladder alone, MacCormac finds that the twofold distension is the better method. In some experiments which he records he found it possible to elevate the anterior fold of peritoneum as much as four inches. The quantities of fluid used were 10 ounces in the rectal bag and 15 ounces in the bladder.

THE RADICAL CURE OF HERNIA.

Mr. M'Ewen, of Glasgow (*Annals of Surgery*, August, 1886), describes his method of operating for the radical cure of oblique inguinal hernia :—

"After having reduced the bowel, make an incision sufficient to expose the external abdominal ring. An exploration of the sac and its contents is then made, and the finger, introduced through the canal, examines the abdominal aspects of the internal ring and the relative position of the epigastric artery. The operation may then be divided into two parts, the one relating to the establishment of a pad on the abdominal aspects of the internal ring, the other to the closure of the inguinal canal. The steps of the operation are as follows :—

"(A.) The formation of a pad on the abdominal surface of the *circumference of the internal ring.*

"(1.) Free and elevate the distal extremity of the sac, preserving along with it any adipose tissue that may be adherent to it. When this is done, pull down the sac, and while maintaining tension upon it, introduce the index finger into the inguinal canal, separating the sac from the cord and from the parietes of the canal.

"(2.) Insert the index finger outside the sac till it reaches the internal ring, there separate with its tip the peritoneum for about half an inch round the whole abdominal aspects of the circumference of the ring.

"(3.) A stitch is secured firmly to the distal extremity of the sac. The end of the thread is then passed in a proximal direction several times through the sac, so that, when pulled upon, the sac becomes folded upon itself like a curtain. The free end of this stitch, threaded on a hernial needle, is made to traverse the canal and to penetrate the anterior abdominal wall about an inch above the internal ring, the wound in the skin being pulled upward so as to allow the point of the needle to project through the abdominal muscles without penetrating the skin. The thread is relieved from the extremity of the needle when the latter is withdrawn. The thread is pulled through the abdominal wall, and when traction is made upon it, the sack, wrinkling upon itself, is thrown into a series of folds, its distal extremity being drawn furthest backwards and upwards. An assistant maintains traction upon the stitch until the introduction of the sutures into the inguinal canal, and when this is completed the end of the stitch is secured by introducing its free extremity several times through the superficial layers of the external oblique muscle; or it may be secured to a minute portion of decalcified drainage-tube placed on the surface of the muscle. A pad of peritoneum is thus placed upon the abdominal side of the internal opening, where, owing to the abdominal aspect of the circumference of the internal ring having been refreshed, new adhesions may form.

"The following modifications have been practised:—After securing the stitch to the distal extremity of the sac, the thread has been passed directly through the abdominal muscles without first transfixing the sac. In children this may be sufficient. On one occasion, instead of placing the stitch extra-peritoneally it was introduced from within, the sac being completely invaginated so as to resemble an umbilicus, the prominence being directed backward into the abdomen. The case did well in every respect. This method has not been repeated, as the extra-peritoneal method answers equally well. After having reduced the sac into the abdominal cavity and securing it there, it has been fixed below by a stitch as well as above. This has been found to be unnecessary.

"(B.) *Closure of the Inguinal Canal.*—The sac having been returned into the abdomen and secured to the abdominal circumference of the

ring, this aperture is closed outside of it in the following manner:—The finger is introduced into the canal and lies between the inner and lower borders of the internal ring. It makes out the position of the epigastric artery so as to avoid it. The threaded hernia needle is then introduced and, guided by the index finger, is made to penetrate the conjoint tendon in two places. First, from without inwards, near the lower border of the conjoint tendon; second, from within outwards, as high as possible on the inner aspects of the canal. This double penetration of the conjoint tendon is accomplished by a single screw-like turn of the instrument. One single thread is then withdrawn from the point of the needle by the index finger, and when this is accomplished the needle along with the other extremity of the thread is removed. The inner side of the conjoint tendon is therefore penetrated twice by this thread and a loop left on its abdominal aspect.

"Second.—The other hernia needle, threaded with that portion of the stitch which comes from the lower border of the conjoint tendon, guided by the index finger in the inguinal canal, is introduced from within outwards through Poupart's ligament and the aponeurotic structures of the transversalis, internal and external oblique muscles. It penetrates these structures, at a point on a level with the lower stitch in the conjoint tendon. The needle is then completely freed from the thread and withdrawn.

"The needle is now threaded with the gut which protrudes from the upper border of the conjoint tendon, and is introduced from within outwards through the transversalis, internal and external oblique muscles, at a level corresponding with that of the upper stitch in the conjoint tendon. It is then quite freed from the thread and withdrawn. There are now two free ends of the suture on the outer surface of the external oblique and these are connected with the loop on the abdominal aspect of the conjoint tendon. To complete the suture the two free ends are drawn tightly together and tied in a reef knot.

"This unites firmly the internal ring. The same stitch may be repeated lower down the canal if thought desirable. In adults it is well to do so. The pillars of the external ring are likewise brought together. In order to avoid compression of the cord, it ought to be examined before tightening each stitch. It ought to be freely movable. It is advisable to introduce all the necessary sutures before tightening any of them. When this is done, they may be all drawn tight and maintained so while the operator's finger is introduced into the canal to ascertain the result. If satisfactory they are then tied, beginning with the one at the internal ring and taking up the others in order. During the operation, the skin is retracted from side to side, to bring the parts into view and to enable the stitches to be fixed subcutaneously. When the retraction is relieved the skin falls into its normal position, the wound being opposite the external ring. The operation is therefore partly subcutaneous.

"When the canal has been brought together, a decalcified chicken bone drainage tube is placed with its one extremity next the external ring, the other projecting just beyond the lower border of the external wound. A few chromic gut sutures are then introduced along the line of skin incision."

"*Operation for Radical Cure of Congenital Hernia*—In congenital hernia the sac is first isolated from its connection with the canal. It is then opened and divided transversely into two parts, care being taken to preserve the cord. The lower part is formed into a tunica vaginalis. The upper is pulled down as far as possible, split behind longitudinally, so as to allow the cord to escape, when it is closed by a stitch or two. This portion is then dealt with quite as the sac of an acquired hernia, additional precautions being necessary to clear the cord at the internal abdominal ring. It is freed of its connections and placed as a pad on the abdominal aspect of the circumference of the internal ring.

"On one occasion a separate tube was formed for the cord out of the sac, but this has not been repeated."

LAPAROTOMY IN PISTOL-SHOT WOUND OF THE ABDOMEN.

Dr. W. T. Bull, of New York (*Annals of Surgery*, Dec., 1886, p. 468), records a second case of recovery from perforating gun-shot wound of the abdomen through laparotomy. The patient was aged twenty-five. The bullet wound was two inches below and two inches to the left of the umbilicus. He had walked to the hospital. Two hours later the abdomen was opened. The intestines were bathed in odourless bloody serum. Half the small intestine was drawn out, rapidly sponged, inspected, and placed under warm towels, before a wound was discovered. Then a loop was met through which the ball had evidently passed. The wound of entrance was about the size of the top of a lead pencil; the wound of exit was twice as large, with a little fold of mucous membrane occupying its lumen. There was no escape of fæces. Three sutures were used for the first and six for the second wound. Iodoform was rubbed along the line of suture. Several more feet of intestine were then examined without finding any other wound. Two tumblerfuls of clotted blood were removed, and it was evident that there was hæmorrhage from some vessel deep in the pelvis. The sigmoid flexure was then exposed, and a longitudinal wound half an inch in length was met with close to the attached border. The muscular coat was bared, but no mucous membrane was seen. The wound was closed with four sutures. The sigmoid meso-colon was exposed, and the source of bleeding

was found to be a circular wound near to its attachment to the middle line, and fully three inches from the edge of the gut. The bleeding was stopped by silk ligature. There was another wound of the meso-colon stripping off a small portion of the peritoneal coat. Several pints of carbolic lotion (1 in 100) were poured into the abdomen and then sponged out.

The intestines were held outside the cavity just one hour, and fifty minutes were spent in applying sutures. Ether was given for two hours and ten minutes. The abdominal wound opened some days after, but the patient was well in eight weeks.

ACTINOMYCOSIS HOMINIS.

Actinomycosis is a progressive inflammatory affection, set up by a certain fungus—the actinomyces; resulting in the formation of granulations and fibrous tissue, and in suppuration; attacking human beings, cattle, and swine; and communicable to cattle by inoculation. The fungus occurs as small globular masses, commonly about the size of a millet-seed, usually of a pale yellow colour, but at times white, brown, green, or speckled, with a surface closely covered with palisade-like rows of clubbed bodies, which give it a mulberry-like appearance. If seated in the tissues, each portion of fungus is surrounded by inflammatory products forming a nodule which in its structure may exactly resemble a tubercular granulation. In the January number of *The American Journal of the Medical Sciences*, Dr. E. Markham Skerritt gives an instructive *résumé* of our knowledge of the disease, and reports a case in which the lung was previously attacked, and which presented certain features of special interest. The ætiology of the disease is still obscure. The micro-organism has never been recognised outside the body; and, apart from inoculation experiments, no direct relationship between the disease as occurring in the lower animals and as met with in man has been established. There is strong evidence to associate the occurrence of the disease with the presence of carious teeth or dental fistulæ. In most of the recorded cases it is noted that the teeth were defective, and in several the malady originated at the site of decayed teeth or of a diseased portion of the jaw. The fungus may enter the body by the mouth and pharynx, the respiratory passages, and the digestive tract. Dr. Skerritt points out that, whatever the primary seat of the disease, in any case of actinomycosis generalisation of the growth by embolism may occur, and this not uncommonly after the tumour has long had a comparatively inactive local existence. The dissemination of the fungus will be accompanied by irregularly recurrent rigors and the usual symptoms of hectic.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

MEDICAL SECTION.

President—James Little, M.D.; President of the King and Queen's College of Physicians.
Sectional Secretary—A. N. Montgomery, M.K.Q.C.P.

Friday, Jan. 28th, 1887.

The President in the Chair.

Death of Dr. Henry Kennedy.

Dr. Fitzpatrick, as the senior member present, moved the following resolution:—"That the Fellows and Members of the Academy of Medicine in Ireland desire to place on record their sense of the loss the Medical Section has sustained by the death of Dr. Henry Kennedy, and to express their sympathy with Mrs. Kennedy and her children." Having known Dr. Kennedy for twenty-five years, he found him always desirous of fostering harmony and good feeling, while his great learning enabled him to promote discussion at the meetings of the Section.

Dr. MacSwiney, in seconding the resolution, said every member of the Academy would admit the great loss sustained by the profession in Dr. Kennedy's death, and the frequenters of the Medical Section in particular would miss his genial, kindly presence.

The President, in putting the resolution, which was unanimously adopted, said the members of the Academy would long miss Dr. Kennedy's familiar face and striking individuality of character.

Treatment by "Massage."

Dr. Knight exhibited a case under treatment by massage, manipulations being given by an experienced masseur.

Dr. MacSwiney asked (1) what was the ailment of the patient, and as to his being a typical case; (2) what the nature of the manipulative procedure; (3) whether the manipulator was a practised masseur; (4) what time was occupied in the process; and (5) what result had been attained so far?

Mr. Cox said he had a case of neurasthenia in a girl, aged twenty-two, and he adopted massage, following, at the same time, the treatment as to diet, seclusion, and rest laid down by Weir Mitchell. The result was satisfactory, following, he believed, much more from the rest and regimen than massage. He had himself submitted to massage by Jules Wölff, who sought tender points and manipulated these considerably, employing, as it were, centrifugal force moving from within outwards—first kneading or pinching the skin; next, the tissue beneath; and then the muscles, until the tenderness seemed to diminish; while he moved the joints freely in all directions. Massage was likely to be beneficial for local loss of power, the result of atrophy of the muscles or stiffness of joints in arthritis.

Mr. Frazer said Sir Astley Cooper, when he failed with a stiff joint, sent the case to a rubber, near Cambridge. For ages the Turks had been in the habit of using massage. The Japanese employed a similar process, filliping the surface of the skin till it became black and blue, with excellent results. Thus friction over tender parts was no novelty.

Dr. Atthill had experience of three cases which, having failed to be cured by medicine, were put under a course of massage, combined with careful supervision and enforced proper feeding; the good results, he thought, were due rather to the treatment than to the massage.

Mr. J. W. P. Kennedy mentioned a case of intractable sciatica, for which the sciatic nerve was stretched without the desired result. Three months afterwards the patient went to a woman in the County Meath, reported to have great powers as regards massage; and under her treatment—rubbing from within outwards over the sciatic nerve—he recovered.

The President said affections of joints produced by rheumatism and the peculiar condition affecting the nervous system in girls were totally different things. He was himself, he believed, the first Irish doctor to place a patient under Wölff's care, and the result was satisfactory. He would, however, never recommend a medical man to undertake the treatment of any of his own patients by the process, but transfer a case that baffled his medical skill to a new doctor and a new nurse.

Dr. Knight, in reply, said the case under treatment he believed to be

suitable for massage, and the masseur had had many years' experience, having rubbed for Sir James Paget, Hutton, and others. On Wednesday afternoon the patient was carried into hospital, and he got his first rubbing at half-past two on Thursday, the time occupied being an hour, with the result that he got a good night's sleep, and walked down to the College of Physicians. There was no arthritic trouble of the larger joints, but many of the smaller were affected. Massage was practised generally in the East, being called "hand-grasping."

Classification of Insanity.

Mr. Conolly Norman read a paper on "Variations of Form in Mental Diseases in relation to the Classification of Insanity." [It will be found in the Number of this Journal for March, page 228.]

Dr. Fitzpatrick regarded Mr. Conolly Norman's cases as simply cases of mania diverging into different forms. This was obvious from the fact that there were frequent cases in which the patient would be one month in a state of deep melancholia, and in the next exuberant with joyousness; and there were also cases in which mania ran into dementia.

Dr. John Eustace said the great point was to know what precisely the mental disease was, for then they might get at the *origo mali*, as, once the disease was ascertained, the doctor would have an aid in deciding as to its curability. However, classification had failed, as no two men were similar in constitution. Pathological autopsy would be of great advantage as a guide to a scientific basis. Some classified mental disease according to the patient's acts—others according to their words. He deprecated transferring the diagnosis from the medical to the legal profession, judges and jurymen being prone to rely on what a patient said as the index of insanity. But a patient's deeds were of far more importance. He did not agree that the stage of depression was the initial stage of cure. The natural termination of mania was dementia. He endorsed Dr. Fitzpatrick's observation that there was the one disease all the time, though under different manifestations. It was a neurosis or neurotic something, rather, perhaps, of spirit than body.

Mr. Molony said words were a guide as well as deeds. For instance, he had a patient who did his work like everyone else, though he always said he was a king.

Mr. Cox complained that the study of insanity was left too much in the back ground, and hoped it would be made a compulsory study generally as in the Royal University.

Mr. Frazer concurred with Mr. Cox, and said no advance had been made in classification since Burton's "Anatomy of Melancholy," a work published two hundred years ago. Mental aberrations of transient character would be studied with profit, and were of more importance to

the general practitioner than the graver forms which gravitated to the asylum.

Mr. Wheeler having also joined in the discussion,

The President hoped the observations of Messrs. Cox and Frazer would bear fruit. The study of insanity was a want that existed, just as the necessity for a proper course in pathology. Mr. Conolly Norman had dealt with variations in the immediate symptoms of insanity as helping to a forecast of the result. Hence the value of classification; and he hoped the time was not far distant when the scalpel or object-glass would enable the surgeon to point out the traumatic changes lying at the root of insanity.

Mr. Conolly Norman replied. The great advantage of a natural system of classification was its prognostic value in predicating of a class a certain source, and especially whether curable or incurable. A large number of cases were due to hereditary influence, and, therefore, the existence of hereditary predisposition was a distinguishing sign for prognosis. Some classified mainly into general paralysis and ordinary insanity, but that system had not been accepted. He was pleased at the value attached to the clinical teaching of insanity.

The Section adjourned.

PLASTER MULL.

The name of plaster mull has been given to a dressing consisting of a very thin sheet of gutta-percha, coated on one side with an adhesive substance containing one or more medicinal compounds, and backed on the other side with mull or undressed muslin. The name of salve mull has also been given to a similar kind of dressing, in which the medicaments are of a more soothing character, consisting of ointments having a basis of suet and lard spread upon mull. The local application of strong salicylic acid "plaster mulls," says the *Therapeutic Gazette*, is strongly recommended by Unna in the treatment of lupus.—*N. Y. Med. Record*, December 11, 1886.

HYDROGEN PEROXIDE IN WHOOPING-COUGH.

Dr. B. W. Richardson speaks very highly of peroxide of hydrogen as a remedy in whooping-cough (*Asclepiad*, Feb., p. 53). In his opinion, it acts in a manner very similar to dilute nitric acid, but with more effect, subduing the spasmodic paroxysm, checking the secretion in the throat, and shortening the duration of the malady. His formula for prescribing it is:—Hydrogen peroxide (10 vols.), ʒvj.; glycerine, ʒiv.; water to ʒiij. Dose, half a fluid ounce in a wine-glassful of water five or six times a day.—*Pharm. Journal.*

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1886–87.

President—W. Whitla, M.D.
Hon. Secretary—James A. Lindsay, M.D., R.U.I.

December, 1886.

Nocturnal Enuresis. By Alexander Harkin, M.D., F.R.C.S.I.; Consulting Physician, Mater Infirmorum Hospital, Belfast; Membre de la Société Française d'Hygiène, Paris.

Nocturnal enuresis is at once the pest of the nursery, and the opprobrium of medicine; in many households the infliction is accepted as an evil without remedy, the aid of science is but seldom invoked, dependence is placed in domestic arrangements, and even corporal punishment for what is undeniably an involuntary offence is too often had recourse to as a preventive or cure. Strange to say, this barbarous procedure finds advocates even among medical practitioners and authors, who, in this instance, bring into disrepute the weight and authority that should always attach to enlightened medical opinion. The limit generally assigned to this disease is from the end of the first to that of the second dentition, but in reality its duration is much longer. It is difficult to determine the exact period of its commencement. In many instances it appears simply as the prolongation, into boyhood or girlhood, of the normal condition of the urinary functions of infancy. The habit often extends into the twelfth or fourteenth year; growing lads at school frequently suffer from the infirmity, and, in my experience, men and women of mature age are not always free from its troubles. It is, however, about the third or fourth year that the habit becomes remarkable, as parents naturally expect at that period that the controlling power of the bladder and rectum should be thoroughly developed; failing this expectation, the aid of the family physician may then be invited, and his practical knowledge be put to a severe test. Independent of the objectionable nature of incontinence of urine, *per se*, its collateral discomforts, and accompaniments of damp clothing and offensive odours, which affect not alone the sufferer, but his companions, would, of themselves, suggest the desirability of seeking for a remedy; and it is not too much to state that in the pursuit of an effective cure the minds of some of the most eminent members of our profession have been exercised in vain. A short review of the remedies proposed, with a list of the writers,

will not be devoid of interest, and even of profit; the great majority of the plans recommended are of an empirical nature, a few are founded on a so-called physiological basis, but their multiplicity and great variety demonstrate that, for so far, no reliable means of cure have been discovered.

The proposals and the authors may, for convenience, be classified—first into the mechanical school, such as Dowse and tying in the catheter; Whitehead and the bougie; Adams and the jugum penis; Shepherd and his iron ring; Corrigan and collodion to the penis; Huxley and the figure-of-eight bandage; and Trousseau, Forster, and Otis, who recommended circumcision. Next, those who depend on external appliances, such as cold water baths, with Guersent, Baudolocque, and Baron Dupuytren; Lallemand and active friction of the loins; on sea bathing with Underwood; dry-cupping, blisters to the sacrum, and electricity with Farquharson; galvanism with Laurence, Reynolds, and Good. Yet another class that relies on medication, Has oward, Panel, Teevan, and Goss on strychnin; Morand, Yeo, Brown-Séquard, Thompson, Fleming, Farquharson, Teevan, and Jones, who prescribe belladonna; Langenbeck, ergot; Coote, creasote; Brown-Séquard and Hewson, bromide of potassium; Buckley, tinct. ferri perchlor. and syrup ferri iodidi. In females—Edis and the intra-uterine stem; Dowse and Jones and the catheter tied in; Teale, caustic to the meatus and dilatation of the neck of the bladder, elastic pad to the urethra, &c.

The subject might be pursued at greater length, but enough is given to show the contrariety, and the contradictory nature of the remedies, and the hypotheses suggesting them. To form a correct estimate of the conditions to which nocturnal enuresis is due, it is not sufficient to be familiar with the anatomical and physiological relations of the kidneys, bladder, and urethra—it is much more necessary to keep in mind their connections with the nervous centres, and especially with the higher nervous centres. Since the important discoveries by Claude Bernard of the influence of the nervous system on the secretion of urine,[a] a more correct view of urinary phenomena has prevailed. It is now known that puncturing the floor of the fourth ventricle, at a point corresponding with the origin of the pneumogastric nerves, while it gives rise to the appearance of sugar, at the same time causes a copious secretion of urine. According to Michael Foster, "section of the spinal cord below the medulla oblongata causes a great diminution, and in most cases a complete, or almost complete, arrest of the secretion."[b] And Eckard infers from his experiments the existence of a centre, for exciting the secretion of urine, situated at the level of the rhombic fossa. That the medulla oblongata influences excretion is also well established, and that the brain and higher nervous

[a] Archives Générales, March, 1849.

[b] Book II., p. 372.

centres exercise a controlling or inhibitory power over the centre for defecation and micturition in the lumbar region, is also a recognised fact. According to Erb,[a] "that by an involuntary reflex action originating in the brain, the reflex mechanism of the lumbar medulla may be brought into activity, and an evacuation produced, is shown by the cases in which psychical impressions are followed by sudden discharges of urine, and that inhibitory powers exist in the cases of the mechanism of urination and all other reflex actions."

Mosso and Pellicani show that in man and animals any psychical act or sensory excitation is accompanied by a vesical contraction. From a clinical point of view, we must have often recognised the influence of mental emotion proceeding from the sentient part of the nervous system upon urination; that in hysteria the secretion is largely increased; that in brain disease the secretion is often nearly suspended, while a free secretion as frequently relieves brain symptoms.

The mechanism of micturition is of a complex character; no doubt, the act of micturition is directly controlled by the urinary centre in the lumbar cord, and on this ground many practitioners have directed their revulsive efforts, such as cupping or blistering, to the vicinity of the lumbar plexus, but this involves a limited idea of causation. In the medulla oblongata there are inhibitory and accelerating centres in constant operation, according to Goltz, quoted by Erb, and the muscular coat of the bladder and the sphincter muscle of the urethra have their reflex centre in the lumbar cord, and also in the higher nervous centres of the brain, the fourth ventricle in the medulla oblongata. In the words of Henry Ashby, "when the bladder becomes distended, an afferent impulse reaches both lumbar centres and brain; if the opportunity is favourable for micturition, the controlling influence of the will is removed, the reflex contraction of the detrusor taking place, aided perhaps by the abdominal muscles." In sleep, however, the controlling influence of the will is wanting, and in nocturnal enuresis the automatic control of the centre located in the fourth ventricle is likely defective, possibly from some lesion in the medulla itself taking the form of congestion of the organ. It is then reasonable to conclude that, independent of exceptional cases, such as acidity of the urine, calculus, contraction of the meatus, adherent prepuce, impetigo and ascarides, which demand special treatment, the influence of the cerebro-spinal system upon the bladder and the sphincter muscles of the urethra underlies the whole subject of causation. The so-called incontinence of urine in children, according to Foster, "is in reality an easily excited and frequently repeated reflex micturition."[b]

Bearing these facts in mind, and having regard to the structural peculiarities of the new-born child in which enuresis is the normal condi-

[a] Page 56, von Ziemssen, Vol. XII.

[b] Book II., p. 381.

tion, we shall be aided in the search for the cause of incontinence of urine in children of a larger growth. To quote from my paper in the *Practitioner* of July, 1884, on "The Medulla Oblongata in its relation with Sexual Disorder :"—"At birth the medulla oblongata is in a much more advanced state of development than the brain, according to Virchow, quoted by Charcot, the life of the nervous system in the newly-born infant is almost exclusively centred in the medulla oblongata and the spinal cord, and the child is only capable of instinctive acts of reflex character ; suction, for example, is totally independent of the will, the volitional centres being then undeveloped, and Hammond, in a lecture delivered before the New York Medical Society, insists that the seat of instinct is exclusively in the medulla oblongata."[a] A large proportion of infantile life, not devoted to sleep, is occupied by the instinctive acts of suction and micturition, the quantity of urine passed, according to Erb, is then relatively larger than in adult life, on account of more active metabolism,[b] and the amount of urea, uric, oxalic, and hippuric acid—*i.e.*, in unusual quantities. It appears then that in the infant the act of urination as well as suction has its initiation in the medulla totally independent of volition, and to find an explanation of the mechanism of unconscious micturition in the grown child, we have but to recognise the same principles and apply them *mutatis mutandis* to the more developed individual.

In sleep, reflex movements are more active and freer from control of the will, and thus the medulla, as in the infant, stimulated by the irritation of a surcharged bladder upon the cord in the lumbar region, receives the afferent impulse, speedily converted into an efferent one, and, yielding to abnormally slight impulses, discharges itself, so to speak, upon the lower centre, and thus involuntary urination takes place. The effect upon the medulla oblongata itself, of the repeated peripheral irritation, is to establish a state of chronic congestion, and thus it is that these attacks are so readily induced, as all nurses and mothers know by the child lying on its back ; the already hyperæmic condition of the bulb being increased by an additional afflux of blood, due to the supine posture of the child.

A mode of treatment of enuresis founded on the theory of a hyperæmic condition of the cord as its cause, would naturally proceed on the lines of lowering the chronic congestion of the organ, and thus it is that remedies such as belladonna and bromide of potassium sometimes relieve by their power of diminishing reflex action, and causing anæmia of the cerebral organs, but their good effects are transient and not always perceptible. I have long since regarded them as insufficient, and have adopted the use of derivatives and revulsives, such as dry and wet cupping, or blisters

[a] Practitioner, p. 98, February, 1884.

[b] Erb, p. 132, von Ziemssen.

to the nape of the neck, applied as high as possible, and as close as circumstances will permit to the neighbourhood of the foramen magnum occipitale and the region of the medulla oblongata.

In my experience I have had but seldom to apply to the cupping; one full vesication being generally sufficient; a blister three inches in length by two in breadth, either by emplastrum lyttæ, or by my favourite remedy, the linimentum cantharidis of the Pharmacopœia, applied vertically, suffices. It is very seldom that a second application is required; occasionally, especially in females, after some months of respite, there may be a call for the renewal of the remedy; in obstinate cases and in grown-up patients, dry or wet cupping may be requisite to complete the cure. It is of importance to note that while this infirmity is of much less frequent occurrence in the female, it is also sometimes more difficult of cure; this may be accounted for by the anatomical peculiarities of structure in the female organs—the urethra is only one and a half inches in length, and is much wider than in the male; it is besides unprovided with a sphincter muscle so distinctive of the other sex. It is also generally well known that females, even in waking moments, have not always complete control over the bladder, and that the slight impulse communicated by a fit of sneezing, laughing, or coughing, may at any time in some individuals cause a complete evacuation of its contents. My plan of treatment has been thoroughly tested, however, in a Female Orphanage and St. Patrick's Industrial School, at present containing more than 150 female children, averaging from six to eighteen years, and the manager informs me that there has not been a single case for more than a year in the school, and that those treated by blistering had all recovered, only two having required a second application. In private practice, too, it has been fairly successful in female children. I do not propose to select any examples from females; I shall give the details of a few, sufficient to illustrate the power of the remedy in males of different ages. The first is borrowed from my paper[a] in the *Practitioner* of February, 1884, and goes to prove the controlling influence of revulsives to the medulla in urinary as well as sexual debility and disorder, and it was to this case that I owe the idea of revulsives in nocturnal enuresis.

NEURASTHENIA SPINALIS.

Case I.—"Some twelve months since a very pale and attenuated gentleman consulted me for a complication of evils; his manner was highly excited and hysterical, his avocation required great mental application and strain, and the effect of these upon his nervous system, together with the practice of unnatural excitement of the genital organs to which he had been much addicted, had reduced him to a state of

[a] The Medulla Oblongata in its Relation with Sexual Disorder. Practitioner, February, 1884, p. 105.

despondency which was maintained by daily and nightly seminal emission, which made his life miserable. The irritability had extended to the bladder, so much so that he could not be absent from home more than half an hour at once—the calls were so frequent. The nights were most painful, as he had occasion to rise every hour or so to urinate, and each occasion was followed or accompanied by a semi-erection and emission. The danger was such that he lay awake the greater part of the night to prevent the attacks if possible, and only got a few hours of broken and unrefreshing sleep towards morning. I advised the application of the wet pack over the pubic region, and anæmic as he was, I cupped him over the nape, being able to obtain only a small quantity of blood, yet the effect was instantaneous. His general health speedily improved, and he increased in weight, and for three months had not a single return of his enemy. He returned to severe study and irregular meals, and had a slight recurrence, but a second cupping quickly restored his equanimity; and he wrote to me from England lately, rejoicing in the complete restoration of his mental and bodily health." The double infirmity in this case reminds one of the truth of the old saying, "*Castus raro mingit.*"

Case II.—J. McE., aged fourteen years, one of a large family, had been subject to the disease from childhood. Various remedies, such as sea bathing, had been tried in vain. He was brought by his mother, telling me that the accident occurred almost every night, and that the lad could not leave home for a day in consequence. I prevailed on her to permit me to apply the liquid blister over the nape of the neck, having previously tried it on the lad on the fourth dorsal vertebra without effect. The result was most successful. The boy, she informed me, never after had a recurrence of the attack but upon one occasion, when he had partaken of a heavy supper of oatmeal porridge.

Case III.—Mr. J. G. brought his nephew, J. G., aged sixteen years, to my house upon 14th December, 1885, stating that he had received him into his office and house as an apprentice to business, but that his wife could not consent to his remaining on account of the nightly infirmity to which the lad was subject. I bade him to strip the boy's shoulders, and having applied the vesicant to the nape, as high up as possible, I afterwards covered the spot with absorbent cotton, telling Mr. G. that in five hours a blister would form, and that from that moment his nephew would never commit the offence. As I predicted so it occurred, and on inquiring a few days since, the cure, I was told, had been complete and permanent.

Case IV.—On the 26th December, 1885, Mrs. W., a widow, brought a lad of ten years to me, under peculiar circumstances. By the death of her husband she had been left with a large family unprovided for. This boy had been adopted by a religious body near Dublin, who undertook to

educate and provide for him in after-life. After a short residence at the College, the lad was returned on her hands, on account of this infirmity. The mother was in great distress. I reassured her, however, by saying that I would cure her son before leaving the room, proceeding in a similar manner as detailed. I further advised the lady to keep the lad under observation for a short time. She did so, and then sent him back to his friends in the College, where he still remains, perfectly cured.

Case V.—On March 23rd, 1885, J. W. G., aged fifteen, brother to a lady that I had cured of the vomiting of pregnancy by blister over the dorsal spine, was brought to me by his mother. He was of a scrofulous habit, and ill with otorrhœa. He had been affected with nightly incontinence of urine since childhood, and his health was suffering from its effects. I blistered him, as recorded in other cases, and one application sufficed for a perfect cure.

Case VI.—Mr. M., a widower, aged forty, called on me in February, 1885. He had been suffering from paraplegia, which confined him to bed for several years, out of which paralysis of the bladder and rectum remained. He could not retain his urine for more than half an hour at a time in daylight; and being a business man, he was greatly inconvenienced by the frequency of the calls. He could not relieve his bowels except by a daily enema; and at night had to rise very often to urinate, and had also to suffer three or four times or more from involuntary discharges in sleep. His applications for advice were generally met with the reply, "Have you not got paralysis of the bladder?" and little was therefore attempted for his relief. After a few days I cupped him high in the nape of the neck, taking about two ounces of blood, and followed the application by a blister. Relief was soon experienced. He at once got rid of the irritability of the bladder in daytime, and up to the present date has complete control in waking hours. The rectum also regained its natural power, and responded to the effects of a pill as in former days; and for a time the nightly enuresis was relieved. He was quite rid of that trouble for four months, but having too freely indulged in the pleasures of the table, the irregularity returned, and at present he suffers in that respect as before. It will require a fresh application of the revulsive remedies to restore him to his former convalescence.

Case VII. is in some respects, although from the opposite end of the pole, very like the last. On November 6th, 1886, Mrs. ——— brought a child, aged two years and four months, for advice. He had several unconscious nightly discharges from the bladder, and could not control its action even in the daytime. In addition, he suffered from prolapsus ani, and from the patulous condition of the inguinal canal the testicles were movable up and down, from the abdominal ring to the scrotum. I promised that the enuresis should be cured, and stated that I hoped the prolapsus would also yield to the same remedy. The child was again

brought to me after the expiration of a week, when the mother informed me that I had effected a complete cure of the nocturnal incontinence, that the child had obtained control in the daytime, and that the prolapsus had altogether disappeared. No change in the condition of the testicles. I visited the child to-day at its own home, and was again informed that in both respects the cure was complete. The stimulus of the blister appeared to have roused the energy of the nerves that preside over the health of the bladder and rectum in the medulla, and to have compensated somewhat for the physical arrangement in the child which predisposes to prolapsus ani. According to Professor Cunningham, "the distance between the tip of the coccyx in the new-born child (and consequently in the young child) appear to be relatively greater than in the adult man."[a]

I have thus adduced some selected cases in proof of the efficacy of my line of treatment, and in support of my ideas on the ætiology of the disease. The last cases have this in common, that while both in the child and in the adult its controlling power over inordinate action of the bladder was established, the tone and function of the rectum and anus were, as a collateral result, also restored. In Cases III. and IV. I had the satisfaction, besides curing the disease, of influencing in a beneficent manner the future lives of the young patients.

The Lagan Nuisance. By Charles Kevin, M.D.

The River Lagan has a course of about forty-four miles, and drains a valley, for the most part, equal to about 330 square miles, but a considerable portion of this part of the country is high ground, and subject to a large rainfall. The waters of the Lagan are enclosed in levels, or basins, by locks, till within two and a-half miles of the Albert-bridge, at which spot the first weir is placed. Above this point the river is not tidal, and comparatively free from impurities. The range of tide, according to the late borough surveyor, at the Belfast quays is nine feet at ordinary *spring* tides, and six and a-half feet at ordinary *neap* tides. The *principal sewers* entering into the Lagan between the first locks and the Queen's-bridge are the following:—

1st. That which drains Mountpleasant and the neighbourhood. It takes its course past Dunesk and empties itself below first locks.

2nd. Rugby-road and the streets off it are drained by a sewer which enters the Lagan at the Botanic Gardens.

3rd. That which drains Essex-street, Glenfield-place, Fitzroy-avenue, University-street, and Agincourt-avenue, opening into the Lagan about 30 yards above Ormeau-bridge.

4th. The Cook-street sewer, which opens in mid-channel at the foot of

[a] Cunningham Memoirs. Anatomy of the Anthropoid Apes, Royal Irish Academy, p. 141.

Cook-street, and drains Cook-street, M'Clure-street, the Lower Windsor district, and the Union.

5th. Still keeping this side of the river, we come to the Blackstaff itself and tributaries inside and outside the borough.

6th. The High-street sewer at the foot of High-street, or rather the High-street *river*.

7th. The Ballynafeigh district is drained by a sewer opening into the Lagan below the Ormeau-bridge.

8th. Opens at the end of Middle-Path-street, near the Co. Down Railway Station, and drains that neighbourhood.

These numerous and ever-increasing sewers are contributing large quantities of sewage matter to the river, a portion of which is carried out by the ebb tide, another portion is left high and dry on the banks, while a third portion travels backwards and forwards with the tide until it is deposited in the bed of the river. We have all felt, I have no doubt, the fearful exhalations which proceed from the exposed banks of this river during the hot summer months, especially at the Ormeau-park, rendering this beautiful resort at times totally uninhabitable. One could hardly call up a greater contrast than that presented to our view from the Ormeau-bridge at times. Visit it at full tide and the spectator is at once impressed by the graceful windings of the stream as it fades from view, both up and down the river, reminding one of the sea-serpent of the silly season—the overhanging trees on the one side, and the gentle sloping pasture land on the other. The stately swan sails majestically by, followed perhaps by a lazy lighter-man pushing his solid craft along, while his wife stands mildly at the helm, and his terrier dog keeps a sharp look out on the quarter-deck. But return in half a dozen hours. The swan has retired in disgust from the place, the seafaring man lies deep in the mud, the well-known contents of the water-closets are lying all around you, while your sense of smell is outraged in every breath.

The Bill brought before us to-night is called the Main Drainage Bill, but its other name is "The Purification of the Lagan Bill."

The preamble, after declaring that we are governed by the mayor, aldermen, and burgesses thereof, acting by the Council, says:—"And whereas the River Lagan is at the present time in an unsanitary condition, and it is expedient that the said river should be purified, and that the necsssary works in connection therewith should be constructed."

But when we read the Bill, nothing to my mind is more conspicuous than the almost complete ignoring of the Lagan in the scheme brought forward by Mr. Bretland. True, there are two crumbs of comfort. The workhouse will discharge its quota into the high level sewer, and at page 23, paragraph 34, we find the following:—"Within seven years from the passing of this Act it shall be the duty of the Corporation to complete a scheme for intercepting and diverting into the outfall, works by this

Act authorised, all the sewerage discharged into the River Lagan and the Victoria Channel through their sewers, *which will not be intercepted by the sewer by this Act authorised.*"

The late borough surveyor, Mr. Montgomery, in his able Report printed in 1875, said—"That the Blackstaff increased very much the difficulty of designing a proper system of drainage for Belfast." Many of these difficulties will suggest themselves. It has numerous contributing streams. Filth is thrown into it; it is polluted before entering the borough of Belfast in Ligoniel. It has a large number of mills on its banks, whose owners have a right to its waters for more than twenty years. Take, for instance, the large mill at Bath-place, off Falls-road, the water of the Blackstaff runs through the closets for use of the workers. This has been the case for nearly fifty years. The Council now say we can do nothing, as we pollute the river ourselves, but when we refrain from this we shall compel millowners to give up such practices. This will lead to endless litigation, and our Town Council are not particularly fortunate in such encounters. The heated waters from the mills are poured into it, and it is the last resting-place of many a domestic pet.

It seems to me that as long as the Blackstaff empties itself into the Lagan we shall still have a Lagan nuisance to complain of. Let all the other sewers be intercepted, the Blackstaff will be quite enough of itself to foul all the waters of the Lagan. The defects of the scheme are admitted by Mr. Bretland, and he proposes an additional one—namely, to deepen and narrow the Lagan, below the first locks, to the Albert-bridge, and to stone the mud banks in the same manner as has been done at the Twin Islands, at an estimated cost of £108,000. Mr. Bretland has consulted Sir J. W. Bazalgette, and he of course approves of it—*consultants are the most agreeable of men.*

Another scheme has been brought before the public—namely, to construct locks at the new Albert-bridge, and a channel for the Blackstaff from the Gas Works by the side of the Central Railway under the arches of the Albert-bridge, and opening at the seaward side of the bridge. Then to carry the sewers by the side of the Lagan (Co. Antrim side) and make them discharge their contents below the new locks. The waters of the Lagan would then remain at high water, the smell would be done away with, the water in the basin would be renewed from the levels above and from the rainfall, and, if at any time it became foul, there could be no difficulty in letting it off and renewing it at full tide. It is proposed to put locks on the new Albert-bridge, at the County Down side, for raising and lowering the barges, and a storm sluicing weir in the central arch, and to retain the Blackstaff as a tidal channel and still capable of floating the barges up to the Gas Works as at present. A new embankment would be constructed from the present mouth of the Blackstaff to the Albert-bridge, separating the Blackstaff completely from the

Lagan. An intercepting sewer would be made from the Ormeau-bridge to the new channel of the Blackstaff, which would receive all the sewerage discharging between these points. There would be a sluice valve at the Ormeau-bridge end of the sewer, communicating with the Lagan, for the purpose of scouring out the sewer at low water. Another weir would be placed at the Gas Works end of the Blackstaff, over which the normal flow of the Lagan would run. In times of storm this would be supplemented by the weir placed at the Albert-bridge ; the latter weir could also be used for scouring out the channel below the bridge at intervals. The Lagan and Blackstaff would thus run parallel to each other, and not as at present when they meet at right angles, of course the incoming tide floating upwards its sewerage matter (and also the High-street sewer contributing its quota to the inhabitants of the Ormeau-road).

The proposed locks would prevent this coming and going of the sewerage matter; would cover over 57 acres of mud, and make the Lagan an ornamental water. The slob lands opposite Short-strand would be banked up, and no more sewerage matter would be brought there by this method than by the existing one. The main drainage scheme is an excellent one, but surely it would be worth trying to make it as perfect as possible. It is not intended that this scheme should take the place of that of the Corporation, but that it should supplement it. I am convinced that the high level scheme will never make the Blackstaff pure. The *low* level may never be constructed, and even if it should we need not expect much improvement on the waters of the Lagan from it. It will be many years before completion of the work. The population is rapidly increasing in the vicinity, and every year will add to the sewerage matter to be dealt with by the Corporation. This scheme would probably cost £20,000, it would add considerably to the value of property in the neighbourhood, and in all probability remove a great and growing evil. The present time, we in the immediate neighbourhood think, is very opportune indeed for carrying out a work of this kind. The old Albert-bridge is a thing of the past. A new and substantial one must be constructed, and that on a sure foundation. We ask that locks should be placed on this new bridge, and believe that this would remove the Lagan nuisance in conjunction with the new channel for the Blackstaff.

To sum up—those who think with me believe that the Blackstaff cannot be purified by the main drainage scheme; that the time is a long way off when we might expect some relief which could only be after the high level, low level, and east sewers have been constructed; that we bring forward a more expeditious method (but, alas! it is our misfortune that it is not the product of an official brain), and less expensive scheme; that our scheme will prevent flooding of the low-lying districts of the town; that it will deepen the harbour by the scour at the storm weir, and add greatly to the value of property in the neighbourhood, as well as improve the health of the community.

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, February 26, 1887.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

Towns	Weeks ending				Towns	Weeks ending			
	Feb. 5.	Feb. 12.	Feb. 19.	Feb. 26.		Feb. 5.	Feb. 12.	Feb. 19.	Feb. 26.
Armagh -	10·3	10·3	20·7	0·0	Limerick -	29·7	20·2	37·8	35·1
Belfast -	23·0	25·6	30·9	31·4	Lisburn -	9·7	4·8	9·7	24·2
Cork -	34·4	18·8	23·4	24·7	Londonderry	23·2	32·1	33·9	28·5
Drogheda	25·4	46·5	33·8	12·7	Lurgan -	30·8	30·8	15·4	25·7
Dublin -	28·8	27·0	34·7	30·1	Newry -	14·0	14·0	28·1	21·1
Dundalk -	30·6	21·8	21·8	21·8	Sligo -	28·9	4·8	19·2	28·9
Galway -	13·4	30·3	30·3	40·3	Waterford -	13·9	23·2	27·8	39·4
Kilkenny	25·4	55·0	8·5	42·3	Wexford -	34·2	12·8	47·0	17·1

In the week ending Saturday, February 5, the mortality in twenty-eight large English towns, including London (in which the rate was 18·4), was equal to an average annual death-rate of 19·6 per 1,000 persons living. In Glasgow the rate was 23·7 ; and in Edinburgh it was 17·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 26·4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·5 per 1,000, the rates varying from 0·0 in ten of the districts to 5·3 in Londonderry—the 13 deaths from all causes registered in that district comprising 3 from measles. Among the 99 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from typhus, 2 from enteric fever, and 1 from diarrhœa ; among the 22 deaths in Limerick are 1 from typhus and 1 from whooping-cough ; and the 6 deaths in Drogheda comprise 1 from scarlatina.

In the Dublin Registration District the births registered during the week amounted to 201—95 boys and 106 girls—and the deaths also numbered 201—95 males and 106 females.

The deaths represent an annual rate of mortality of 29·7 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 28·8 per 1,000.

Fifteen deaths from zymotic diseases were registered, being equal to the number for each of the two weeks preceding, but 20 below the average for the fifth week of the last ten years; they comprise 4 from scarlet fever (scarlatina), 1 from typhus, 3 from whooping-cough, 1 from diphtheria, 1 from enteric fever, 2 from diarrhœa, 1 from dysentery, &c.

Nineteen cases of scarlatina were admitted to hospital during the week, being 3 over the admissions for the preceding week, and equal to the number for the week ended January 22; 25 scarlatina patients were discharged, and 100 remained under treatment on Saturday, being 6 under the number in hospital at the close of the preceding week.

There was but 1 case of typhus admitted to hospital, against 7 admissions in the preceding week; 3 patients were discharged, 1 died, and 16 remained under treatment on Saturday, being 3 under the number in hospital on Saturday, January 29.

Seven cases of enteric fever were admitted, being equal to the admissions for the preceding week; 3 patients were discharged, and 28 remained under treatment on Saturday, being an increase of 4 as compared with the number in hospital at the close of the preceding week.

Fifty-three deaths from diseases of the respiratory system were registered, being 4 over the number for the preceding week, but 14 below the average for the fifth week of the last ten years; they comprise 31 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, February 12, the mortality in twenty-eight large English towns, including London (in which the rate was 17·6), was equal to an average annual death-rate of 19·5 per 1,000 persons living. In Glasgow the rate was 24·7; and in Edinburgh it was 21·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 25·2 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·9 per 1,000, the rates varying from 0·0 in eleven of the districts to 5·3 in Londonderry—the 18 deaths from all causes registered in that district comprising 3 more from measles. The 110 deaths from all causes registered in Belfast comprise 1 from scarlatina, 1 from typhus, 1 from whooping-cough, and 4 from diarrhœa. Among the 29 deaths in Cork are 2 from enteric fever, and 1 from whooping-cough.

In the Dublin Registration District the births registered during the week amounted to 216—105 boys and 111 girls—and the deaths to 185—87 males and 98 females.

The deaths represent an annual rate of mortality of 27·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·0 per 1,000.

Eighteen deaths from zymotic diseases were registered, being 13 below the average for the corresponding week of the last ten years, but 3 over the number for the week ended February 5; they comprise 5 from scarlet fever (scarlatina), 1 from typhus, 3 from whooping-cough, 3 from enteric fever, 4 from diarrhœa, 1 from diphtheria, &c.

Twenty-four cases of scarlatina were admitted to hospital during the week, being 5 over the admissions for the preceding week; 24 patients were discharged during the week, and 100 remained under treatment on Saturday, being equal to the number in hospital on the previous Saturday.

During the week, as in the week preceding, there was but one case of typhus admitted to hospital; 7 patients were discharged, and 10 remained under treatment on Saturday, being 6 under the number in hospital on Saturday, February 5.

Four cases of enteric fever were admitted to hospital during the week, being 3 under the admissions for the preceding week; 10 patients were discharged, 1 died, and 21 remained under treatment on Saturday, being 7 under the number in hospital at the close of the preceding week.

The number of deaths from diseases of the respiratory system registered is 46, being 24 below the average for the corresponding week of the last ten years, and 7 under the number for the week ended February 5; the 46 deaths comprise 29 from bronchitis, and 6 from pneumonia or inflammation of the lungs.

In the week ending Saturday, February 19, the mortality in twenty-eight large English towns, including London (in which the rate was 19·3), was equal to an average annual death-rate of 21·1 per 1,000 persons living. In Glasgow the rate was 27·0; and in Edinburgh it was 23·7.

The average annual death-rate represented by the deaths registered last week in the sixteen principal town districts of Ireland was 31·2 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·3 per 1,000, the rates varying from 0·0 in Cork, Newry, Kilkenny, Wexford, Dundalk, Sligo, Lisburn, and Armagh, to 12·5 in Londonderry. The 19 deaths from all causes registered in the last-named district comprise 6 more from measles and 1 from diphtheria. Among the 133 deaths from all causes registered in Belfast

are 3 from typhus, 2 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 3 from diarrhœa; and the 12 deaths in Waterford comprise 1 from enteric fever, and 1 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 183—96 boys and 87 girls—and the deaths to 239—113 males and 126 females.

The deaths represent an annual rate of mortality of 35·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 34·7 per 1,000.

Only 15 deaths from zymotic diseases were registered, being 18 below the average for the corresponding week of the last ten years, and 3 under the number for the week ended February 12; they comprise 1 from measles, 3 from scarlet fever (scarlatina), 2 from whooping-cough, 1 from diphtheria, 4 from enteric fever, 3 from diarrhœa, &c.

Twelve cases of scarlatina were admitted to hospital, being 12 under the admissions for the preceding week; 21 scarlatina patients were discharged, and 91 remained under treatment on Saturday, being 9 under the number in hospital on Saturday, February 12.

No cases of typhus were admitted to hospital; 2 typhus patients were discharged, 1 died, and 7 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Four cases of enteric fever were admitted to hospital, being equal to the admissions for the preceding week; 5 patients were discharged, and 20 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, February 12.

Sixty-four deaths from diseases of the respiratory system were registered, being 18 over the number for the preceding week, but 1 under the average for the seventh week of the last ten years; they comprise 47 from bronchitis, and 8 from pneumonia or inflammation of the lungs.

In the week ending Saturday, February 26, the mortality in twenty-eight large English towns, including London (in which the rate was 20·9), was equal to an average annual death-rate of 21·3 per 1,000 persons living. In Glasgow the rate was 24·8; and in Edinburgh it was 20·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 29·5 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in nine of the districts to 4·8 in Sligo—the 6 deaths from all causes registered in that district comprising 1 from whooping-cough. Among the 135 deaths from all causes registered in Belfast are 2 from typhus, 2 from whooping-cough, 4 from enteric fever, and 6 from diarrhœa. The

16 deaths in Londonderry comprise 1 from diphtheria; and the 17 deaths in Waterford comprise 1 from enteric fever.

In the Dublin Registration District the births registered during the week amounted to 219—109 boys and 110 girls—and the deaths to 208—99 males and 109 females.

The deaths represent an annual rate of mortality of 30·7 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 30·1 per 1,000.

Sixteen deaths from zymotic diseases were registered, being 1 over the number for the preceding week, but 14 under the average for the eighth week of the last ten years; they comprise 2 from scarlet fever (scarlatina), 2 from whooping-cough, 3 from simple continued and ill-defined fever, 5 from enteric fever, 2 from diarrhœa, &c.

During the week ended February 12, 24 cases of scarlatina were admitted to hospital; in the following week the admissions fell to 12; and last week they further declined to 7. Fifteen scarlatina patients were discharged during last week, and 83 remained under treatment on Saturday, being 8 under the number in hospital at the close of the preceding week.

Two cases of typhus were admitted to hospital during the week; 6 patients were discharged, and 1 died; there were but 2 cases of the disease in hospital on Saturday.

Three cases of enteric fever were admitted to hospital, being 1 under the admissions for the preceding week; 5 patients were discharged, 1 died, and 17 remained under treatment on Saturday, being 3 under the number in hospital on Saturday, February 19.

Forty-seven deaths from diseases of the respiratory system were registered, being 10 below the average for the corresponding week of the last ten years, and 17 under the number for the week ended February 19; they comprise 32 from bronchitis and 10 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of February, 1887.

Mean Height of Barometer, - - -	30·256 inches.
Maximal Height of Barometer (on 9th, at 9 a.m.), -	30·670 „
Minimal Height of Barometer (on 2nd, at 3 p.m.), -	29·390 „
Mean Dry-bulb Temperature, - - -	42·4°.
Mean Wet-bulb Temperature, - - -	39·8°.
Mean Dew-point Temperature, - - -	36·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·220 inch.

Mean Humidity, - - - - -	81·2 per cent.
Highest Temperature in Shade (on 27th), - -	57·1°.
Lowest Temperature in Shade (on 10th), - -	26·0°.
Lowest Temperature on Grass (Radiation) (on 10th),	20·9°.
Mean Amount of Cloud, - - - -	51·6 per cent.
Rainfall (on 11 days), - - - -	·541 inch.
Greatest Daily Rainfall (on 2nd), - - -	·136 inch.
General Directions of Wind, - - -	W., S.W., N.E.

Remarks.

Showery and squally at first, the weather soon became quiet, dry, and fine. From the 4th to the 21st inclusive the barometer was uninterruptedly above 30 inches, and conditions were for the most part anticyclonic. After the 6th only ·158 of an inch of rain fell on five days, and the month was one of the driest Februarys on record. On the whole, the weather resembled that of the preceding January, although the extremes were less marked; and as in January the S. and S.W. winds often rose to the force of a gale, with rain, along the Atlantic seaboard both in Ireland and Scotland, while the weather was quieter, drier, and colder in England.

In Dublin the mean temperature (42·9°) was slightly below the average (43·2°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 42·4°. In the twenty-two years ending with 1886, February was coldest in 1873 (M. T. = 37·9°) and warmest in 1869 (M. T. = 46·7°). In 1886, the M. T. was 39·7°; in the year 1879 (the cold year) it was 40·1°. As a general rule, February in Dublin is only a shade colder than March. This is owing to the continued development in February of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity, while the Continental anticyclone embraces the British Isles and Scandinavia in March, causing easterly winds.

The mean height of the barometer was 30·256 inches, or no less than 0·394 inch above the average value for February—namely, 29·862 inches. The mercury rose to 30·670 inches at 9 a.m. of the 9th, and fell to 29·390 inches on the afternoon of the 2nd. The observed range of atmospherical pressure was, therefore, as much as 1·280 inches—that is, a little over one inch and a quarter. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 42·4°, or 1·4° above the value for January, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 41·9°, or 0·6° below the average mean temperature for February, calculated in the same way, in the twenty years, 1865–84, inclusive (42·5°). The arithmetical mean of the maximal and minimal readings was 42·9°, compared with a twenty

years' average of 43·2°. On the 27th the thermometer in the screen rose to 57·1°—wind S.S.E.; on the 10th the temperature fell to 26·0°—wind calm. The minimum on the grass was 20·9° on the same date. The rainfall was only ·541 inch, distributed over 11 days. The average rainfall for February in the twenty years, 1865–84, inclusive, was 2·244 inches, and the average number of rainy days was 17·6. The rainfall and the rainy days, therefore, were both very much below the average. In 1883 the rainfall in February was large—3·752 inches on 17 days; in 1879 also 3·706 inches fell on 23 days. On the other hand, in 1873, only ·925 of an inch was measured on but 8 days. The rainfall in the present year was much the smallest recorded in February for very many years. In February, 1886, 1·981 inches of rain were measured on 15 days.

A lunar halo was seen on the 1st, and an aurora borealis on the 12th. The atmosphere was foggy on the 6th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, and 28th. High winds were noted on 11 days, reaching the force of a gale on two days, the 3rd and the 24th.

In the period ending Saturday, the 5th, the barometer was high over Germany and France, low and unsteady to the N.W. of the British Islands, over which the dominant systems of atmospherical pressure were cyclonic. Squally S. to W. winds, changeable temperature, and unsettled showery weather were, in consequence, prevalent.

The weather of the week ending Saturday, the 12th, was generally fine and quiet and much colder than that experienced during the three preceding weeks. Throughout the period an anticyclone lay over Western Europe. Until the 11th, the centre of highest pressure lay to the eastward of Ireland, where light S.E. or S. winds prevailed; but on the day named the barometer was highest off the coasts of Donegal, and the wind backed to N.E. The mean height of the barometer in Dublin during this week was 30·611 inches, and the mean temperature was 37·3°, or exactly 7° below that of the previous week. Bright aurora was seen in the North of Ireland on the night of the 12th.

At the commencement of the third week (13th–19th, inclusive) pressure was highest off Mayo and Donegal (30·70 inches); but the barometer soon gave way in that locality, and by Wednesday, the 16th, gradients for S.W. winds were well marked over Ireland. On the night of the 17th a V-shaped depression passed eastwards across the country; in the rear of this system the barometer rose fast and the wind shifted to N.N.W., with a falling temperature. Saturday, the 19th, was very cloudy, but otherwise fine.

During the earlier part of the week ending the 26th, the weather was in a changeable, showery state over the whole of the United Kingdom. Towards the close of the period, however, a marked improvement took place, as the barometer rose in the S. and S.E., and conditions became

anticyclonic. In Ireland and Scotland temperature was high for the time of year; in England towards the close of the week, while the sun's rays were distinctly warm, the extension of the anticyclone was accompanied by great terrestrial radiation, so that sharp night frosts were experienced from the 25th to the end of the month.

As in January, the weather generally was cold on the Continent and over the greater part of England, mild in Ireland, Scotland, and Norway.

PERISCOPE.

EXAMINATION OF CANDIDATES FOR HER MAJESTY'S ARMY, INDIAN AND NAVAL MEDICAL SERVICES.

The following were the papers which were set at the examination in February, 1887:—*Natural Sciences* (Dr. Allman)—*Zoology.*—1. What are the more important modifications presented by the respiratory organs in the adult amphibia? Give one or more examples of each. 2. In what group of the cephalopoda is the ink sac absent? Mention some of the characters which are here specially associated with the absence of an ink sac. 3. Refer to its proper class and order an animal with the following characters, and give one or more examples:—Animal radially symmetrical, with multicellular composition; œsophagus differentiated from the general body-cavity, but freely opening into it, and united to the walls of the cavity by radiating mesenteric folds. *Botany.*—4. What is the most important difference, as regards anatomical structure, between a moss and a fern? 5. Select any flowering plant you please, and give an accurate description of its pistil. 6. Refer to its natural order a plant with the following characters, and give one or more examples:—Leaves alternate, without stipules. Calyx formed of two sepals which are caducous. Corolla with four petals. Stamens numerous, inserted on the receptacle. Fruit, a single-celled capsule with parietal placentæ. Seeds numerous, with oily albumen. *Physics.*—7. An electric current is made to pass through a copper wire above and parallel to the length of a horizontally suspended magnetic needle. What is the effect of the current on the needle? 8. What temperatures on the centigrade scale correspond to 32°, 140°, and 210° Fahrenheit? 9. What is meant by a river delta? Mention the principal river deltas of the world. *Medicine* (Dr. Aitken).—1. A case for analysis and commentary:—May 15th, 1885, a boy, aged nine years, was seen because he was suffering from pains on the inner side of each thigh. On the previous day, whilst attempting to jump over a string he tripped and fell on his knees, the thighs being wide apart. Pain, felt at first, soon passed off; and he walked about. During the afternoon he worked at his lessons in school

without complaint; but on returning home later in the day, said that he felt tired. He went to bed before his usual hour, but did not sleep well. On examination there was considerable tenderness to touch along the whole inner aspect of each thigh, especially marked along the ramus of the pubes on either side, but there was no swelling. He could move the limbs freely in bed, although such movement caused pain in the thighs and in each groin. Temperature 99° Fahr., pulse 100 and regular. Rest in bed, with fomentation to pained parts, were prescribed. In the family history it is important to mention that an elder sister was, at the same time, suffering from the effects of infantile paralysis. There is no history of nervous disease on the mother's or father's side. *Previous History.*—He has always been a quick and intelligent child, but never robust. He has had whooping-cough, chicken-pox, and mumps; soon after the last affection he suffered from pain in the left ear, followed by discharge, from which he quite recovered. Occasionally he has passed much uric acid in the urine. He used to have "night terrors." About five years ago he had a severe blow on the head from a fall; and for some time afterwards is said to have constantly blinked his eyes as if he could not keep them open. During last winter, whilst in the country, he frequently complained of pain in the lower part of the back, and of being tired, but no notice was taken of this. May 16th he was seen again, because the pain was not better; the fomentations gave only temporary relief. On the inner aspect of each thigh there was still tenderness to touch, but the pain was more general over the thighs. There was distinct loss of power in the lower extremities; he could draw them up in bed, but only slowly and with great difficulty. On the 9th of May (seven days ago) he had a blow on the lower part of the back with the butt end of a toy metal pistol, weighing about four ounces, which caused him great pain at the time. This was in the same region of the back of which he had frequently complained last winter. On examination there was pain on pressure over the lower dorsal region, especially the lower three dorsal vertebræ, which were more prominent than the rest. There was also sensitiveness to pressure in the lower cervical region; and in both of the situations mentioned the application of a hot sponge caused great pain, which could be endured only for a second, whereas in other parts of the spinal column it produced no great uneasiness. The patella-tendon reflex was absent from each limb; the plantar reflex was not active, but was not lost. All the other superficial reflexes were present. There was no ankle-clonus. Sensation was perfect, grasp of each hand good, but the squeeze of each hand was not so good as it ought to have been. Temperature 101° Fahr., pulse 100, regular. In the evening the loss of power was more marked, and the superficial reflexes, with the exception of the cremasteric, gone. He could not now raise or draw up either limb, and could only move the

toes slowly and apparently with considerable effort. He could not sit up in bed, and when asked to do so he dragged the lower limbs upwards along the bed by using his hands as a fulcrum and partially raising the trunk, he then placed his arms behind him and so tried to prop himself up. He could remain thus for a few seconds only. The bowels had acted naturally, and he had passed water freely. Specific gravity of urine 1015, acid in reaction, phosphatic, and loaded with urates, but it contained no albumen, sugar, or bile. Swallowing was perfect, and he took nourishment well. Vision good, pupils natural and active, accommodation good, ophthalmoscopic examination revealed nothing abnormal. There was no tendency to formation of sore over sacrum. Respiration was regular, normal; hearing and taste normal. Towards night pain had extended to the legs and was increased. There was numbness in the legs, and occasional twitches were noticed in them. He lay in the posture of a paraplegic. Bromide of potassium was ordered in ten-grain doses. On the morning of the 17th he was crying with the pains in his limbs, but the medicine had soothed him, and he passed a fairly good night. Tincture of belladonna was now given in doses of ten minims every four hours, in addition to a belladonna plaster along the spinal column. May 18th.—He now complained of "pain in the stomach, as if something tight were tied round him" (an expression not suggested to him); temperature 101·2° Fahr. Other signs remained the same, the superficial and deep reflexes being abolished, except the cremasteric, which, however, acted feebly. He now complained of "pins and needles" in his feet. The muscles of the thighs and legs felt flaccid and flabby, and already seemed wasted. May 19th.—His condition continued unchanged. The muscles were examined by faradaism. Commencing with a weak current, and gradually increasing until the greatest strength was reached from the primary coil, no reaction whatever was obtained in any of the muscles of the lower limbs, which were tested in regular order. With a very powerful current from the secondary coil, there was no reaction in the left leg or thigh, nor in the right leg, except in the *tibialis anticus*, which acted very feebly. The reaction of the flexors and extensors of the upper limbs was not so good as natural. This mode of examination caused considerable pain. May 20th.—From this date his condition gradually improved. He could move the toes of each foot. On the 21st he could move the legs slightly, and on the 22nd he could draw them up and move them with ease in bed. On testing with the faradaic battery, it was found that contractility had returned in all the muscles. On the 24th he could stand for a minute unsupported, and the belladonna was omitted (he had taken it for eight days). The superficial reflexes were all again present, as well as the knee-jerks. On June 7th a poroplastic jacket was applied. It gave him support and he could walk about gently, but not up or down stairs. Three weeks

later his back was examined. There was then no pain on percussion over the lower three dorsal vertebræ, and their prominence was not so pronouuced. He was still kept at rest, as much as possible in the open air, and the result was perfect recovery. Discuss the probable pathology of this case, dwelling especially on the points in its history which distinguish it from cases of "compression paraplegia" (as in Pott's disease); from pachymeningitis; from spinal meningitis; from acute myelitis and lastly from diphtheritic paralysis. To what morbid condition of the cord, and to what region in it may the symptoms and signs in the case most probably be referred? 2. Name the *round worms* that have been found in man and their *habitat* in the human body. Explain the mode of development of those you name, and how they find access to the parts of the body in which they are found. 3. Describe the symptoms, course, and differential diagnosis of enteric fever. 4. How would you treat a case of fæcal accumulation in a child, and how is the accumulation to be distinguished from tubercular mesenteric glands? 5. Name the officinal drugs used as emetics. Explain their actions, their uses, and the peculiarities in the action of each. *Surgery* (Mr. Pollock).—1. Describe the process of union of bone in a simple and also in a compound fracture, the conditions under which union may be retarded, and the treatment to be adopted under the latter circumstances. 2. What are the various pathological changes observed in cases of enlarged thyroid gland? Describe the treatment to be pursued in each condition. 3. What symptoms would indicate the existence of abscess of the antrum? What are its chief causes, and what treatment is best for its relief? 4. What are the distinctive characters of a hard and of a soft chancre? How should either be treated locally and constitutionally? What are the sequelæ which usually follow infection? 5. Describe the conditions known as carbuncle. Under what constitutional state does it most frequently occur, and what should be the treatment? 6. A patient is the subject of empyema, the result of acute pleurisy, and immediate relief is requisite. Describe the means by which this may be afforded, and the changes which must occur to insure the subsequent obliteration of the cavity. Should this obliteration not be effected naturally, what measures should be adopted to produce it? *Chemistry* (Dr. Allman).—1. What are the more important properties of hydrogen? How may hydrogen be prepared? 2. Write down as an equation the decompositions and new combinations which occur in the process of obtaining ammonia gas by heating ammonia hydrochlorate with quicklime. 3. What are the chief sources of the presence of carbonic acid in the atmosphere? *Anatomy and Physiology* (Sir Joseph Fayrer).—1. Describe the astragalus; give an account of its articulations, connections, and parts of importance which are in proximity to it. 2. Describe the origin, course, distribution, and anatomical relations of the genito-crural nerve. 3. Describe the

diaphragm, giving an account of its structure, origin, and insertion, the parts of importance which pass through or are related to it, and the functions which it performs. 4. Describe the thoracic duct, giving an account of its origin, anatomical relations, and structure; also describe the composition, properties, and purposes, in the animal economy, of its contents. 5. Describe the origin, course, and distribution of the facial artery; giving also a brief account of the dissection by which you would expose the vessel and its branches.

THE ARMY MEDICAL SERVICE.

THE following is the official list of candidates who were successful for appointments as surgeons in the Medical Staff of Her Majesty's Army, at the Competitive Examination held in London on the 14th and following days of February, 1887:—

Order of Merit	Names	Marks	Order of Merit	Names	Marks
1	Smith, H. E. H. -	3,390	14	Paterson, J. - -	2,815
2	Alexander, G. F. -	3,290	15	Trask, J. E. - -	2,800
3	Gore-Graham, W. P. -	3,210	16	Forbes, N. H. - -	2,785
4	Woods, E. M. - -	3,195	17	Freeman, E. C. - -	2,755
5	Spong, C. S. - -	3,140	18	Davoren, V. H. W. -	2,730
6	Leishman, W. B. -	3,125	19	Copeland, R. J. - -	2,720
7	Rawnsley, G. T. - -	3,060	20	Blenkinsop, A. P. -	2,670
8	Thomson, J. - -	3,040	21	Borrodaile, A. L. -	2,640
9	Reilly, C. W. - -	2,990	22	Halloran, W. - -	2,640
10	Crofton, W. J. - -	2,895	23	Birt, T. - - -	2,630
11	Wright, A. - -	2,880	24	Peeke, H. S. - -	2,630
12	Luther, A. J. - -	2,850	25	Smyth, R. H. - -	2,630
13	Girvin, J. - -	2,820	—	—	—

TEST FOR COCAÏN.

OBJECTION has been raised against the test for cocaïn suggested by Dr. Giesel, which depends upon the formation of a violet-red precipitate on the addition of solution of potassium permanganate, without any reduction of the permanganate, that it is too delicate, since the presence of even a minute quantity of amorphous alkaloid brings about a reduction.

Mr. H. Maclagan recommends as a practically satisfactory test (*Amer. Drug.*, Feb., p. 22) to dissolve one grain of cocaïn hydrochlorate in about two fluid ounces of water and add two drops of solution of ammonia. He states that, if the salt be pure, upon rubbing the sides or bottom of the containing vessels with a glass rod well-marked striæ will appear where the rod has touched, followed by the formation of a flocculent precipitate, leaving the liquid clear and bright; but that if amorphous alkaloid be present, even in moderately small proportion, no striæ or precipitate will form, the liquid remaining milky for a long time and presenting an oily appearance on the surface.—*Pharm. Jour.*

MENTHOLEATE.

As the result of some experiments as to the solvent best suited for making a solution of menthol for outward application, Professor Remington gives the preference to oleic acid (*Therap. Gaz.*, Jan., p. 36). The method of preparation recommended is to heat two hundred grains of menthol with half a fluid ounce af oleic acid in a test tube; but he says there is no difficulty in obtaining a 70 per cent. solution.—*Pharm. Jour.*

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Extractum Cinchonæ Liquidum (*de Vry*).

Messrs. Fletcher, Fletcher and Stevenson, of Holloway, London, N., announce that they have purchased from the de Vry's Cinchona Company the sole right to manufacture, in this country, the above-named preparation, of which they have presented us with a sample. The method by which it is produced was devised by the eminent quinologist, Dr. de Vry, of The Hague, and forms the basis of the process which has been adopted by the compilers of the *British Pharmacopœia*, 1885. It is the first preparation of its kind in which the rational principle of an alkaloidal standard has been officially recognised. Ext. Cinchonæ Liq. (de Vry) is a *true liquefied Cinchona Bark*, containing fully five per cent. of alkaloids, and presenting in a permanently soluble form all the collateral principles (cinchotannic acid, &c.) by which the medicinal properties of the alkaloids are well known to be enhanced. Being thus of definite strength, the dose of the extract may be determined with scientific accuracy, and by its use cinchona bark may be administered with a precision previously unknown. The entire process of percolation and evaporation is performed *in vacuo* by means of apparatus specially constructed for this purpose. The organic constituents of the bark being thus protected from the changes induced by heat and oxidation, their

peculiar properties are preserved intact. The extract forms, when diluted with distilled water, a permanently clear solution, not to be distinguished from fresh infusion of bark. The extract corresponds to the following characters and tests, which may be found convenient for purposes of comparison:—*Appearance*—Orange-red colour, perfectly translucent, not depositing, even after long keeping. *Flavour*—Agreeable aromatic astringent, *bark* flavour, with persistent bitter after-taste, free from acridity. *Solubility*—Miscible in all proportions with distilled water, forming clear solutions, from pale yellow to red, according to strength, and which do not deposit or become turbid while fresh. *Specific Gravity*—About 1·150. *Alkaloids*—5 c.c. diluted with about 30 c.c. distilled water, and boiled to expel alcohol, give with excess of caustic soda a precipitate, which, when extracted by chloroform, or benzolated amylic alcohol, and dried at 100° C., weighs ·25 gramme, indicating 5 per cent. of mixed alkaloids, one-half of which consists of quinine and cinchonidine. The ordinary tonic dose is ten minims, corresponding to ten grains of finest selected red cinchona bark. As a febrifuge and anti-periodic, larger doses may be given at discretion. For alcohol craving in inebriates, and in the treatment of *delirium tremens*, full doses, to the extent of a drachm or more, should be given at short intervals—to be cautiously discontinued. Alkalies and the alkaline carbonates are incompatible with this preparation.

Perfect Health Biscuits (de Miel).

The International Patents Association, 15 Nicholas-lane, King William-street, London, E.C., have sent us a half pound box of de Miel's "Perfect Health Biscuits." They are palatable, well baked, and of good quality. These biscuits have been found by Dr. Arthur Hill Hassall and Mr. Edwy Godwin Clayton, F.I.C., F.C.S., to contain considerable proportions of nitrogenous matter and of carbo-hydrates; they are also especially rich in salts, which include a large amount of combined phosphoric acid. The flesh-producing, heat-giving, and bone-producing constituents of food are thus all represented in these biscuits. A satisfactory feature is absence of excess of moisture, the baking having evidently been conducted with care. One or two may be taken with meals, or when agreeable.

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MAY 2, 1887.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XXI.—*The Common Tape-worm.*[a] By ARTHUR WYNNE FOOT, M.D., Fellow, King and Queen's College of Physicians; Professor of Medicine, Royal College of Surgeons; Senior Physician, Meath Hospital, &c., &c.

THE seven specimens of "The Common Tape-worm" laid before the Club are not brought forward in advocacy of any particular mode of treatment, although the presence of each of them here is due to the anthelmintic energy of oil of male fern. It is rather for the purpose of making some remarks upon the kind of tape-worm which is most prevalent in this country that I exhibit them.

Up to a very recent period—if it be not so at present—it was considered that the common tape-worm of Great Britain and Ireland was the *Tænia solium*, or pork tape-worm. This opinion is now very much altered, and the T. solium appears to be less frequently met with than *Tænia saginata* (*mediocanellata*).

The seven well-marked examples of tape-worm placed on the table are all specimens of *T. saginata* (*mediocanellata*), and beside each of them are preparations of the generative system in mature segments, whereby the diagnosis can be made at a glance.

The first specimen (marked 25) is sixty-six inches of *Tænia saginata*, passed by a farrier-sergeant of the 7th Hussars, after a

[a] A Communication to the Biological Club, 15th March, 1887.

dose of oil of male fern, followed by one of oil of turpentine. He had previously passed fourteen feet of the worm (measured), in three pieces. He had been frequently annoyed by single segments leaving the anus and wandering about his legs; as to these, he remarked to me that, when he squelched them, "they were like milk." This result was due to the extrusion of eggs from the mature proglottides when the uteri were ruptured by pressure. Even in an unsqueezed segment, while moving about, the eggs are sometimes seen issuing in a stream from a point at the anterior border of the segment where the uterus is most closely approximated to the surface, and, therefore, most easily ruptured by the pressure of the contracting muscles.[a] This soldier had been for twelve months in South Africa, and, while there, used often eat meat almost raw. From the quadrate shape of even the largest of the links in this worm it is evident that the chain has been broken at some distance from its inferior extremity, as the final segments are rectangular, the length exceeding the breadth roughly in the proportion of three or four to one. The lateral offsets of the uterus in this specimen (No. 25) are not as numerous as usual, as the segment mounted is not one of the most mature.

The second specimen (No. 26) is eighteen feet, in one chain, of *T. saginata*, passed by a lady sixty years of age, after a dose of oil of male fern. For eighteen months previously she had been passing detached links, individual zoids. Two months after getting rid of this portion she passed a chain twenty-one feet in length. The first piece is deeply stained with bile; the evacuations, from which I removed it myself, were of a highly bilious character. There is none of the anterior extremity, or even of the superior half of the tape-worm colony in this specimen. This is plain from the shape of the segments; for in the anterior portion of the worm the links are so narrow as only to look like transverse linear markings even behind the place where any distinct segmentation becomes at all apparent. The branched uterus, with its lateral offsets crowded with brown egg-masses, is well seen in a mature proglottis from this worm, the colouring matter of the bile having effected an *ante-mortem* staining.

The third specimen (No. 27) is one of many yards passed by a gentleman who was a prisoner of King Theodore's, in Magdala, from 1863 to 1868. Before that he had been for eighteen months in the Southern Soudan, where pork is never used, but where beef

[a] Leuckart. Parasites of Man. P. 424.

dried in the sun is the usual food of the population. He had been fed on raw beef while a prisoner at Magdala, in accordance with the usual custom in Abyssinia, where, according to the unanimous opinion of observers, only a few of the natives are exempt from tape-worm, and where strangers also soon become infested by it unless they are especially careful about their food, and in particular avoid the favourite diet of raw meat. This must have been portion of a worm of unusual length, as from the proportion between the length and breadth of the segments belonging to the piece in the jar, the portion of the chain here preserved must be far from the anterior half of the worm. It is likely that the colony established in his intestine in Abyssinia flourished on the abundant and varied nutriment the captive enjoyed after his return to Europe. The many-branched uterus, filled with brown egg-masses, is well seen in preparation marked 27.

The fourth specimen (No. 28) consists of thirteen feet six inches of *T. saginata*, in two portions, dislodged from a boy of twelve by oil of male fern. A repetition of the dose on the following day removed thirty-nine inches more. Four months afterwards he complained again of his previous symptoms—viz., frontal headache, deafness, and "seeing things black." Another exhibition of oil of male fern removed twenty feet six inches of worm in one length, besides a fragment ten inches long. The uterine arrangements (No. 28) of a mature proglottis of this tænia are very characteristic of *saginata*. This boy remained tolerably well for six years, when, concurrently with a return of his former head symptoms, he began to pass detached links of tape-worm, which he felt and saw about his person. After two successive doses of oil of male fern he got rid, at one sitting, of fourteen feet six inches of worm. The anterior extremity, though very narrow, did not include the head.

The fifth specimen (No. 29) is a very marked one. It is fully entitled to the epithet of *saginata*, or fat-worm, as the plumpness and consistence of the links testify. It was passed by one of the Metropolitan Police. The uterine structure (No. 29) is most distinctive of *T. saginata*.

The sixth specimen (No. 30) was one of unusual denseness. A maceration which was sufficient for all the others did not render it translucent. It is deeply stained with bile, as is No. 26. It is from the Meath Hospital Museum. There is no history attached to it.

The seventh specimen (No. 31) is a large portion of a chain of

T. saginata. The uterus is (preparation No. 31) very characteristic. It is from the Meath Hospital Museum, and is simply marked "Specimen of Tape-worm."

In each of these Tæniæ the species (*solium* or *saginata*) has been determined by uterine examination. One, or more, of the most mature proglottides is snipped off the chain and immersed in acetic acid in a watch-glass. After having been treated thus for an hour one of the links, pressed between two glass slips, is held up between the eye and the light. The arrangement of the uterus and its appendages can be clearly seen with the naked eye, and better still by the use of a lens or magnifying glass. The median stem of the uterus appears as a wide longitudinal canal running along the middle of the joint. At right angles to this main stem there abut on either side from twenty to thirty branches, succeeding each other at short distances and passing outwards, transversely to the long axis of the link, towards the lateral margin of the segment, close to which they all end blindly. In *Tænia solium* the median stem is shorter, corresponding with the shorter joint; the lateral branches are further separate and fewer in number, amounting hardly ever to more than nine on either side, and usually only to seven. As a rule (remarks Leuckart) the most hasty comparison of the structure of the uterus in the two is quite enough for correct diagnosis.

In examining the uterus in order to determine the species of these worms I have, in every instance, taken three segments of each chain for the purpose, because the proglottides are liable to some individual variation. The uterus of *T. saginata* may in one segment look like that of *T. solium*, owing to reduction in the number of lateral branches or to obliteration of some of the lateral offsets. It is also important to select the most mature proglottides obtainable, as the unripe segments do not show the same number of lateral offsets; furthermore, in the unripe links the offsets ramify rather than branch dichotomously. Of course were the head procurable the diagnosis could be made with positive certainty—the head of *T. saginata* being unarmed, without hooklets, hence called *inermis* (Moquin–Tandon); while that of *T. solium* is provided with a coronet of hooks (*T. armata*).

With the precautions I have mentioned—viz., choosing *two* or *three* of the most *mature* proglottides—there can hardly be any mistake made in the identification of the species of tænia to which detached links belong.

In diagnosticating the presence of *T. saginata* it is also an assistance to bear in mind the tendency its mature segments show to leave their host spontaneously, an act which is very rarely observed in the case of *T. solium*. This spontaneous emigration of the proglottides causes a troublesome and disagreeable tickling. In warm, damp environments they can retain their motion and life even for days. The individual links may creep about the legs till the continued lowering of temperature brings them to a standstill. In the warmth of the bed they often creep over the whole body, especially if the skin be somewhat damp. This mobility is the result of the considerable muscular development prevalent throughout every link of the chain, which contributes not a little to the thick and fat character of the *T. saginata*, and explains how the worm can work its way back into the intestine even when it has been so far expelled that a long piece of it hangs out from the rectum or anus. Andry has observed the end of a tape-worm, protruding from the anus during defecation, quickly withdraw again into the intestine on any attempt to remove it. Leuckart believes that the proglottides which Pallas detected on the wall of a room, more than a yard above the patient's bed, were those of *T. saginata*, and not those of the less muscular *T. solium*. In lukewarm water their movements can be followed for hours, and the whole worm has been seen to shorten powerfully and suddenly when rapidly transferred from the warm intestine to cold water or spirits. The contraction of this smooth organic muscle fibre is one of the causes of the very different estimates made of the lengths of tape-worms, as there is an immense variation between those measured in the recent state, while still alive, and those measured after immersion in some preservative fluid. It is also quite conceivable that the powerful contractions of *T. saginata* may be related to the sensations of heaving up and down which some who harbour these worms state they experience in the intestines.

This worm, the *T. saginata*, has long been confounded with the *T. solium*. It has been often referred to in modern times under the name of *mediocanellata* given it by Küchenmeister. This latter name has met with disapproval, as it was founded on an erroneous anatomical idea, and Heller[a] considers it better to follow the suggestion of Leuckart, and go back to the name it had before received from Goeze—viz., *Tænia saginata* (stout, well-fed, from the large quantity of parenchyma in each segment), which exactly

[a] Intestinal Parasites. Cycl. Med. Von Ziemssen. Vol. VII., 687.

describes its general characteristics. In distinguishing this tænia Goeze also used two other epithets, *grandis* and *cucurbitina*, both of which are singularly appropriate. The term *saginata*, which means fattened, full-fed, refers to the plumpness and bulk its segments exhibit when contrasted with those of *T. solium*, which Goeze calls *plana pellucida*. The epithet *grandis* is appropriate, because this worm exceeds *T. solium* not only in length, but in width and thickness, as well as in the dimensions of the separate segments. Speaking of it, Leuckart[a] observes:—"This is the largest of the human tæniæ, but it is not its length alone that characterises this worm; it is also of unusual breadth and thickness, and is provided with segments which are remarkable for their size and firm appearance."

The term *cucurbitina* was suggested by the well-known melon or gourd-seed shape the ripe proglottides containing embryos assume (even in their contracted condition). The resemblance is very apparent by placing beside them some of the seeds of the common vegetable marrow. A very old Arabian name for the tape-worm is "*chabb-al-kar'i*" (properly gourd-seed). This also throws light on the statement of Hippocrates,[b] that the tape-worm patient very often evacuates "*quali quid cucumeris semen*" (*οἷον σικύου σπέρμα*)—that is to say, that he voids in portions the ripe joints of the worm, or proglottides—describing a clinical phenomenon which is much more frequent and much more striking in the case of *Tænia saginata* than in that of *Tænia solium*, in which the ripe proglottides are very seldom liberated singly.

In geographical distribution this tape-worm (*T. saginata*) is almost cosmopolitan. Prevalent in all parts of the African continent, its headquarters seem to be Abyssinia, where people do not consider themselves healthy if they are without it, regarding it as having an advantageous influence on their health. They consider that without it they would suffer from constipation and its consequences, as while the tape-worm is present the stools are somewhat fluid and uniform. This lessens the tendency to diseases of an inflammatory nature connected with the rapid changes of temperature prevalent in a mountainous country. Only if it becomes too long do they think that it causes any disorder. The distribution of *T. saginata* and *T. solium* has been found to coincide with that of the popular diet of beef and pork respectively. *T. saginata* is

[a] The Parasites of Man. 1886. P. 406.
[b] Leuckart. Op. cit. P. 409.

acquired by eating raw or rare beef, and hence is often called the beef tape-worm; *T. solium* is derived from the use of imperfectly cooked pork, and is often called the pork tape-worm. Hence, Abyssinia is the classic land of *T. saginata*, for there it is that the use of raw, still quivering cow's flesh is looked upon as the greatest delicacy. In Abyssinia every inhabitant, male or female, is infested with intestinal worms from his fourth or fifth year. Since the flesh of swine is avoided by the Abyssinians, it is not *T. solium* but *T. saginata* which occurs. A French prisoner describes a banquet in Abyssinia at which he was treated to their great delicacy ("brindo"), raw meat:—"After the first few mouthfuls we became quite reconciled to it. Flesh while fresh and warm has a pleasant taste, resembling somewhat that of good oysters, and is certainly a very nourishing and readily digestible article of food. One can with ease eat two pounds, and still rise from the table with a good appetite. According to my experience, raw meat tastes better the fresher it is, and the more marked the twitching of the muscles still is. Cold 'brindo' is just as nasty as stale oysters."[a]

Jews, who eat no flesh of swine, remain free from *T. solium*, but are hardly less infested with *T. saginata* than their Christian neighbours. I have been told of Jews having passed tape-worms, and have heard of its being regarded as a proof of disobedience to their ritual. A casual examination of one of the mature proglottides should be made before such an uncharitable accusation could be substantiated; it would then probably be found that the worm voided was *T. saginata*. *T. solium* stands in the same relation to the pig as *T. saginata* to the ox, but is less common, because, except in a few localities, the breeding of swine is not so general as that of the ox, especially in hot countries. The employment of the pulp of raw meat, as proposed by M. Weisse, of St. Petersburg, in the treatment of chronic diarrhœa, has been followed in several instances by the development of tape-worm. Tape-worms have, indeed, not infrequently been found in children at the breast, especially when they have been fed on raw, grated meat.[b] Leuckart[c] himself knew a case of a hysterical woman who was ordered to eat raw flesh for dietetic reasons, and who expelled seventeen tape-worms, on two occasions, within eight days. Races who use an almost exclusively vegetable diet—as the Egyptians,

[a] Heller, in Von Ziemssen's Cyclop. Med. Vol. VII. P. 689.
[b] Loc. cit. Vol. VII. P. 690.
[c] Parasites of Man. P. 535

Hindoos, Malays, and other—enjoy an immunity from either tape-worm. In India it is practically the European residents and the flesh-eating Mohammedans who suffer from it. That immunity from tape-worm, of whatever species, is more connected with diet than climate is shown by the case of Iceland, where there is a dislike of pork among the inhabitants, and where flesh of any kind plays a very subordinate part among the articles of food.[a] Even edible mussels and oysters the Icelander uses only as baits in his fisheries, and not for eating, except in seasons of the greatest scarcity.[b] Greenland[c] is another region where tape-worm is said not to occur at all.

Cobbold[d] has put forward the view that *T. solium* infests the poor and *T. saginata* the rich, in accordance with the opinion that the lower classes subsist chiefly upon pork, while the wealthier prefer mutton, veal, or beef. This is a view which could be soon tested by examination of the voided segments.

It is admitted by all who have inquired into the matter that the relative frequency of the occurrence of *T. saginata*, as compared with *T. solium*, can no longer be questioned. Leuckart says that, whereas at the time the first edition of his book appeared, the cases of *T. saginata* had to be counted by units, it is now, on the contrary, *T. solium* that has to be sought for. He suggests as a reason for its (*T. solium*) having become rare, the fact of its relations to the cysticercus (measle) of the pig becoming known to an ever-extending circle, and to the fear of Trichina having taught us to pay greater attention to the condition of pig's meat. A more diffused knowlege of the distinctive features of the two Tæniæ, as observed in their ripe proglottides, is also daily reducing the numbers of reported cases of T. solium. The examination of museum specimens of tape-worm discovers the greater numbers of *saginata* compared with *solium*. Cobbold says that on looking over the museum specimens at the Middlesex Hospital he was surprised to find at least half the worms there to be referable to *T. mediocanellata* (*saginata*). I have heard that a similar inquiry in the museum of the Royal College of Surgeons of Ireland has resulted in the discovery that the preparations were almost exclusively examples of *saginata*. This I can understand on the grounds that for

[a] Hirsch. Handbook of Geographical Pathology. Vol. II. P. 286.
[b] Küchenmeister. Vol. I. P. 239.
[c] Hirsch. Vol. II. P. 286.
[d] Entozoa. P. 243.

museum purposes a tape-worm is a tape-worm, and that naturally the largest and finest specimens would be preserved—such almost invariably being *T. saginata*. I have myself in former days, when Curator of the Meath Hospital Museum, several times discarded tape-worms offered for preservation, because they were neither "*grandis*" nor "*saginata*"—in fact, "not good enough specimens to be put up." Probably some of these were the *T. solium*, which in size, thickness, and number of segments, is considerably less than *T. saginata*. This selection of the fittest may possibly, in some cases, account for the scarcity of *T. solium* in museums.

If it be objected that *T. solium*, the pork worm, should be more frequent in this country, where swine-flesh is a staple industrial product, it might be argued that the very fact of the high merit of the article as produced here proves the great care taken in the *feeding* and *curing* of the pig—two matters which tend to minimise the risk of infection of its flesh with cysticerci, and consequently the formation of *T. solium* in eaters of the flesh. The processes of salting and smoking, if rightly conducted, render the cysticercus harmless by its desiccation. Many experiments by Küchenmeister and Leuckart go to show that hams properly preserved, even though from measly flesh, have not proved injurious. I have also doubts how far the flesh of the pig is really the popular food among the poorer classes, many regarding a "bit of fresh meat" to be as great a luxury as the "brindo" of the Abyssinians.

The vexed point of the etymology of the name *T. solium* may be briefly alluded to here. It has been so long established by customary usage that, however uncouth, it seems likely to retain its currency by prescriptive right. The first to use the name seems to have been Arnoldus de Villanova, who in 1300 writes of a worm, "*qui Solium sive Cingulum dicitur.*" The derivation from *solus*, suggested by Andry (1701), is grammatically incorrect (on account of the "*i*"); that from *solium* (a throne) is obviously made to suit the case, and is suggestive of the solitary occurrence of the tape-worm. The idea of its solitary occupancy of the intestine is perpetuated in its French name, "*ver solitaire.*" It is now known that of these two tape-worms—*solium* and *saginata*—neither has any prescriptive claim to the sole tenancy of the intestine; indeed of the two, *saginata* happens to be more usually found alone than *solium*. The name "*ver solitaire*," found as far back as Andry (1701), is inapplicable, for not uncommonly there are several of the solium species present at the same time. The multiple occur-

rence in one host of *T. solium* has been observed by Küchenmeister, who has several times found two or three together; his colleague, Dr. Pfaff, saw seven; Madame Heller, thirty; Dr. Kleefeld, of Görlitz, counted forty expelled from one patient.[a] Heller[b] says that he himself disentangled twenty-eight from a mass that was passed by a bath-man in the Medical Clinique in Erlangen; and adds, that where so many are present at once they almost invariably belong to the *T. solium* species, much more rarely to the *T. saginata.* Leuckart,[c] dissatisfied with these derivations, interested his learned colleague, Dr. Krehl, Professor of the Oriental Languages at Leipzig, in the question. In his search after the meaning of the word solium he directed his attention to the Oriental tongues, because Arnoldus, who first uses the word, having translated several of the works of Avicenna, might be assumed to have had an acquaintance with them. Professor Krehl offers as an explanation the Syriac word for the tape-worm, *schuschl*, which means chains, and explains the phonetic transition to *sol-ium* thus:—The Arabians, who derived their knowledge of medicine from the Syrians, would call the word *susl*, or *sosl.* In course of time the second *s* in this word was dropped—as in *même* for mesme, *île* for isle—and so, in Arabic, *sol* or *sul* remains, meaning the chain-worm. It has been pointed out, in reference to this derivation, that even at the present day the tape-worm (*T. saginata*) is extremely prevalent in Syria. Leuckart regards this derivation, from the Syriac word for chains, as a thoroughly satisfactory explanation of a formerly almost meaningless appellation.

The points to which I would draw attention in this imperfect communication are that *T. saginata*, or, as it has often hitherto been called, *T. mediocanellata*, is entitled to be called the common tape-worm, and the great facility with which the species of the worm can be made out by examination of often a single proglottis. To Leuckart everyone with any classical taste must feel indebted for the explanation he has procured of the uncouth appellation solium.

The following authorities may be consulted with advantage on the subject of this communication:—

Leuckart.—The Parasites of Man. 1886.

Heller.—Intestinal Parasites. Von Ziemssen. Cyclop. of Med. Vol. VII.

[a] Cobbold. Entozoa. P. 211.

[b] Intestinal Parasites. Von Ziemssen. Cyclop. Vol. VII. P. 692.

[c] Parasites of Man. P. 411.

Cobbold.—Entozoa.

Hirsch.—Handbook of Geographical Pathology. Vol. II. New Syd. Soc. 1885.

Ziegler.—Gen. Pathol. Anat. Part I., section vii.

Küchenmeister.—Man. of Parasites. Vol. I. Syd. Soc.

Welch.—Anatomy of T. mediocanellata. *Quart. Jour. Micros. Sci.* N. S. Vol. XV. 1875. P. 1. 2 plates, 17 figures.

ART. XXII.—*On the Reparative Treatment of some of the Graver Forms of Vesico-Vaginal Fistula.*[a] By THOMAS MORE MADDEN, M.D., F.R.C.S. Edin.; Obstetric Physician, Mater Misericordiæ Hospital; Consultant Obstetrician, National Lying-in Hospital; Physician, Hospital for Sick Children, Dublin; formerly Examiner in Obstetrics and Gynæcology, Queen's University; &c.

NOTWITHSTANDING the great advance of modern gynæcology, in no respect better shown than in the operative procedures by which vaginal fistulæ have been so generally rendered amenable to reparative treatment, the management of such cases in some exceptional instances still presents one of the most difficult problems that may occur in our special line of practice.

On the present occasion I do not purpose to refer to the ordinary forms of vaginal fistula consequent on parturition, and which are now less frequently met with as well as more amenable to ordinary operative treatment than was formerly the case. I shall, therefore, now confine myself to those graver as well as more exceptional cases in which more difficult procedures must be resorted to.

These cases may, I think, be roughly divided into two categories—firstly, those which, although some considerable loss of tissue has resulted from sloughing of the vesico-vaginal walls, are capable of repair by measures having for their object the bringing together and maintaining in apposition the separated parts until firmly consolidated by adhesive inflammation. In the second class may be included all cases in which the loss of substance or the position and character of the rupture are such as to preclude the restoration of the former structural integrity of the parts, and where either, by plastic operation, new vesico-vaginal or vesico-

[a] Read before the Obstetrical Section of the Academy of Medicine in Ireland, Friday, April 1, 1887.

uterine walls must be built up, or else a new condition of the injured parts must be established.

With regard to the first class of cases, or where some degree of sloughing has followed long compression from delay in the second stage of labour, the main trouble in the operative treatment consists in keeping together the surfaces included in the sutures until they become united by new connective tissue, and in overcoming or preventing the disturbing influence of the retractile tension occasioned by the muscular structures of the vesico-vaginal walls, and the tendency to separation occasioned by their natural mobility. I need not here refer to the various mechanical expedients which have been designed for this purpose, as they are probably well known to the Academy; and, moreover, in the majority of instances, they are either unnecessary or useless, as their object may be generally accomplished by the division of any specially tense bands, or by merely nicking these at short intervals with the scalpel so as to allow them free expansion. In some few instances, however, I have found it necessary to employ the little instrument now shown, which is merely a modification of the late Mr. Baker-Brown's bar-splint for the purpose of lessening the tension on the sutures, and so hold the edges of the wound securely together.

Vesico-Uterine Fistulæ, if of less frequent occurrence, are obviously of greater importance and present much greater difficulties in their reparative treatment than those already referred to. In the comparatively exceptional cases of this kind that have come under my notice in hospital, in almost every instance the patient had been delivered instrumentally. Moreover, they most commonly occur in patients who have had a number of children, and who consequently have the abdominal parietes relaxed and the uterine walls softened and disintegrated by imperfect involution. In some instances they originate in lacerations of the cervix, extending thence across the roof of the anterior vaginal *cul-de-sac* into the bladder. And in such cases it is obvious that, even should the cervical laceration be healed over from below in the ordinary way, a fistulous communication would still remain above between the bladder and the uterine cavity or cervical canal, which must be subsequently dealt with.

Under these circumstances, therefore, we must either resort to tracheloraphy in the first instance, followed by a plastic operation on the vesico-uterine rent, or close the os uteri, so as

to convert this organ into an appendix to the bladder, through which the patient will afterwards menstruate, or else obtain a similar result by turning the cervix into the vesical cavity by the operation recommended by Dr. Goodell in some cases of this kind, which may be accomplished by denuding a portion of the cervical surface and uniting it to the vivified free edge of the fistulous opening. As a rule, neither of the latter operations should be resorted to whenever the former can be successfully performed, as their result should apparently be to render the patient capable of future gestation. In one remarkable case of this kind, however, in which Dr. Goodell's operation was anticipated by the late Dr. M'Clintock, the normal aperture of the uterus being thus closed; nevertheless, the patient afterwards again became pregnant, as it would appear through the urethra.

In cases of complete destruction of the anterior wall of the vagina involving the entire vesico-vaginal septum from the urethra to the base of the bladder, gynæcologists were formerly content to palliate the miserable condition of the patient by mechanical contrivances, such as a well-adjusted urinal belt. Recent experience has, however, demonstrated the feasibility of affording complete relief from the incontinence of urine in such cases by denuding the internal labial surfaces, and then closing them by sutures, so as to leave only a small aperture for the passage of urine, which can, if necessary, be controlled by a properly-adjusted spring trap or pad, and which, as will be seen by the following case, may not even require this. The advisability of such an operation in any instance is, however, another and a very difficult question, and most certainly it should never be undertaken without absolute necessity and after full consideration of all the possible consequences of converting the vaginal canal into a receptacle for urine—a condition entirely foreign to its physiological purpose, and one liable to be productive of grave ulterior results.

The objections to this operation have been very forcibly urged by one of the most eminent modern authorities on the subject; and as one of the objects of the present communication is to bring forward a case where I succeeded in relieving an otherwise incurable patient by the procedure thus condemned, I shall here, in the first place, recapitulate Dr. Emmet's views on this point. "There exists," he says, "no greater malpractice than the procedure which, we are told, was practised by that great master, the late Prof. Simon, of Heidelberg. He never seemed to appreciate the import-

ance of the principle which I am now endeavouring to impress upon the reader. Without hesitation he would shut up the vagina when difficulties presented themselves in bringing together the edges of a fistula, as if the sole object was to give a retentive power regardless of the consequences. From my own observation I have learned that it is but a question of a few months, a year, or possibly two, before serious consequences must arise after leaving a receptacle, like a portion of the vagina, in which the urine may stagnate. To give a retentive power for so short a time is not a sufficient compensation for the suffering and consequences which supervene. As the result of my experience, I would urge that the operation should never be resorted to under any circumstances. The maximum has now been reduced to two or three per cent. of cases where the resources of the surgeon cannot overcome all the difficulties which may be presented in closing a vesico-vaginal fistula. Something more may be accomplished in the future; but, at present, these incurable cases are better without the retentive power when gained by Simon's method. The surgeon endeavours to cause the parts to heal thoroughly, and educate the patient in the art of taking care of herself, and in this way much can be done to render her condition a comfortable one."

Whenever the destruction of tissues has been so extensive as to permit the inverted bladder, filled with intestines, to protrude from the labia in an almost strangulated condition, some surgical relief is imperative. In such cases I do not hesitate, with the consent of the husband, to unite the sides of the vagina at any point within the canal at which I can gain the needed support for the bladder. This is done to relieve the suffering attendant upon the prolapsed bladder, and it is very effectual. But I always leave an opening at the most dependent portion, and one above, so that the urine cannot accumulate, and the parts may at any time be washed out if necessary. After the surfaces have all healed, and the woman has learned to keep herself free from excoriations, her health will remain good, and the escape of urine will be comparatively but a slight inconvenience. Certainly no comparison can be drawn between the comfort of one with retentive power at the cost of cystitis and its consequences, and the other in a healthy condition, with the urine escaping into a cloth or some other suitable receptacle.

I go further than Dr. Emmet, and would say that it should, moreover, not be forgotten in this connection that in some

instances vesico-vaginal fistulæ of large extent may possibly be cured spontaneously or without any operative interference. I myself am cognisant of two such cases, in which the patients, in early life, had each suffered parturient laceration of the vesico-vaginal walls, and for many years subsequently endured the incontinence of urine and other discomforts consequent thereon. In both cases, in the course of time, these patients by the occurrence of senile atresia of the vagina at last become perfectly freed from any trace of the accident, the effects of which had rendered miserable the better part of their long lives. Such cases are, however, far too exceptional to have much practical influence in determining the adoption or non-adoption of any available plan of treatment in cases of vesico-vaginal fistula, such as the following. In this instance the ordinary method of treatment failed; and as the operation employed, although, perhaps, neither original in its conception nor approved by the highest authority, was successful, and is not often, if ever, here resorted to, I have thought its details might be worth bringing before the Academy.

Case.—K. B., aged forty, widow, six children, sent in by Dr. O'Brien, Johnstown Bridge; admitted November 12th, suffering from vesico-vaginal fistula and laceration of cervix of four years' standing. She was in a wretchedly cachectic state; her thighs and nates raw and excoriated by the constant urinary dribble, and thickly encrusted with sabulous deposit. The history of the case, as well as it could be ascertained—as she was an extremely stupid woman—was that until the birth of her last child she had enjoyed good health. Her labour was very protracted, extending, according to her own account, over sixty-nine hours, but she had no assistance beyond that of a neighbourly "handy woman." She states that the incontinence of urine was first noticed the day after delivery, but became much worse when she arose from bed, six days later, and had since continued. She sought no advice, however, until a month before admission, when she consulted Dr. O'Brien, by whom she was sent up to hospital. On examination the cervix was found extensively lacerated bilaterally, the rent extending from the anterior lip of the vaginal roof and down through the septum, and involving the entire of the base of the bladder. There was considerable loss of substance, apparently from sloughing. A few days after admission an attempt was made to close this large opening, in the usual manner; and with great difficulty, owing to the loss of tissue, its vivified edges were brought together. Unfortunately, however, although some union took place in the lower part of the wound, no substantial benefit followed this operation; and, hence, considering that under the existing

local circumstances and general condition of the patient, any further effort in the same direction would be equally unavailing, when she again returned (three months later) I resolved on trying a modification of Simon's operation for closing the vaginal aperture so as to form a new receptacle for the urine. With this view a superficial incision was cautiously made, extending elliptically through the vaginal mucous membrane from above the meatus anteriorly round the canal to its posterior commissure behind the nymphæ, and thence dissected off the subjacent structures and removed, so as to leave an extensive raw surface. A great deal of venous hæmorrhage took place during this, which was arrested by hot water and turpentine, whilst a few small spouting arterial branches were twisted or ligatured. When all hæmorrhage had been thus arrested the denuded surfaces were brought together by silver wire sutures, so as to completely close the passage from the vaginal orifice upwards. The vulva was sealed with aseptic dressing, leaving merely an opening for the retaining catheter, and secured by a pad and a bandage. On the next day she complained a good deal of pain and soreness, which was relieved by opiates, but beyond this her recovery was uninterrupted, the temperature never rising above 100°. The catheter, being a railroad one, was changed and cleaned daily, without disturbing the dressing, until the eighth day, when the sutures were removed and the parts found united. Her bowels were then cleared by an enema, the vulval dressing replaced, and the catheter continued for another week, at the end of which it was finally withdrawn, and she was then found to have complete retentive power in the recumbent position, though when standing there was still a slight dribble from the dilated urethra, which gradually lessened, and after leaving the hospital I heard that she had no vestige of this trouble, from which she remained free until her death, from fever, eighteen months later.

In conclusion I may repeat that, whilst regarding my modification of Simon's operation for closure of the vagina merely as a *dernier ressort*, to be adopted only in the treatment of some exceptional cases of vesico-vaginal fistula otherwise incurable, nevertheless the procedure appears to me to deserve some consideration in such cases. I yield to no one in my respect for Dr. Emmet's authority on this subject, but I would not myself be deterred even by his condemnation from again reverting in any similar instance to the operation by which I benefited the patient whose case has been just related. Whether any renal disease, such as Dr. Emmet insists on as the consequence of Simon's operation, supervened in my case or not I have no data to say. I only know

that a patient whose condition had for years previously been as miserable as any that could well befall a woman, and who to the best of my opinion was otherwise incurable, was by the operation described restored to a state of comfort and apparent health (which lasted for at least some time) subsequently.

ART. XXIII.—*A Year on the Belooch and Afghan Frontier.* By P. H. FOX, F.R.C.S.I., L.K.Q.C.P.; Surgeon, Army Medical Staff.

[*Continued from page 352.*]

Prevailing Diseases; Sickness; Mortality; Causation.—The average annual strength of British troops in Quetta hospitals during the year 1884 was 1,074 per diem, while the average daily strength for 1885 was 1,119. The total number of admissions in 1884 were 2,151, while the admissions into the Station Hospital in 1885 were 2,798. During the year 1884 there were 39 deaths in hospital, while in 1885 there were 115 deaths, or nearly three times the number of the previous year. Now it is unnecessary to go further into statistics to show that sickness and mortality in Quetta have been most excessive; and if it were not for the fact that sanitariums were started in "Nagundi" and "Gwaski" during the summer and autumn of 1885, the death-rate would have been very much higher; besides nearly 200 invalids were sent to the Ghizree Sanatarium, Karachi, in December and November, 1885.

Now, as to the causes of the extraordinary unhealthy condition of the troops stationed at Quetta, it must be confessed that opinions differ. However, my own opinion is this—the climate, the water, and ill-ventilated barracks and hospitals are the most fruitful causes of diseases. Besides I am of opinion that the rich alluvial soil of these valleys is impregnated with organic matter and malarial poisons. One thing is certain—the soil is mainly composed of gypsum, and wherever gypsum abounds there malarial fevers will prevail. It must also be remembered that myriads of flies appear in summer, and that dust-storms are very frequent, so that disease is scattered about by these means. The conservancy of the station is not by any means as good as should be desired. The present system consists in carrying off the night-soil in filth carts. Each regiment is responsible for its own conservancy; and during the time I was in charge of troops in barracks I found that the authorised establishment was quite insufficient for the amount of work which

had to be done, so that the night-soil was not carried far enough from the station, and in some cases the latrines were left unattended for two or three days at a time. However, the station is as yet very young, and I understand that a better system will soon be adopted. A scheme has been proposed to carry away the night-soil by tram lines; it is also proposed to impound water in the Hunna Pass and convey it to Quetta through iron pipes. Should such improvements come into force there can be no doubt but that the health of the station will be greatly improved.

Ague.—Of all the diseases which occur in Quetta, ague is the most common. During September, October, and November, 1884, a daily average of 100 cases of ague were treated in the Station Hospital, Quetta. During the same months, in 1885, the daily average was nearly double that of the previous year—in fact, the Station Hospital could not accommodate them. Consequently a "section hospital" had to be opened in a barrack-room, and I was placed in charge. This disease, as a general rule, comes on most abruptly. A man may be on guard, or otherwise employed, and he is suddenly seized, and has to be carried to hospital. The disease is usually ushered in by pain in the head and loins, nausea and vomiting, and occasionally diarrhœa; the urine is scanty, high-coloured, and in some cases suppressed; there is most intense restlessness, and the patient rolls about from side to side in the bed; the appetite is lost; tongue is dry and coated, and there is intense thirst. During the cold stage the patient lies coiled up in bed, shivering and shaking, with his teeth chattering. The eyes are now injected, but the countenance is pale and anxious; the pulse is very rapid (140 or more), and the heart's action laboured. In the course of an hour or two the patient's face becomes flushed, and the skin burning hot. The hot stage now commences, and the temperature runs up often to 106°. This stage lasts for about four hours, and then profuse perspiration breaks out all over the head and body. Before the sweating stage occurs delirium is very common. The perspiration is very profuse in some cases; and this, the third stage, lasts for about three hours, and then a state of apyrexia sets in, and the patient feels inexpressible relief, and usually falls asleep. The intermission now occurs; but its duration is very variable and uncertain—usually the paroxysm occurs every other day—but the quotidian and quartan varieties are very common. As a general rule, the form of ague which occurs every day is by far the most severe. A man who gets fever once is apt to get it again

and again, however short or long the intervals may be. It must also be stated that, as a rule, the three stages bear a direct proportion the one to the other; but I have seen numerous cases in Quetta in which the cold stage was altogether absent. After the paroxysm the kidneys, as a rule, act freely. Each paroxysm lowers the patient more and more. He suffers from anæmia, enlarged spleen, general malaise, and weakness of the limbs, and in bad cases the loss of flesh is very great. As regards the treatment in a general way it may be said that diuretics and diaphoretics are given during the prodromal and paroxysmal stages, and quinine and arsenic during the intervals; complications are treated as they arise. The most notable sequelæ are—general debility, anæmia, hepatitis, splenitis, dysentery, and in a few cases cholera. I have seen a good many patients who, while under treatment for ague, were attacked by dysentery or cholera. Whether there is any connection between the poisons which produce these diseases or not I am unable to say. My opinion is that a patient lowered from repeated attacks of ague is more disposed to catch dysentery or cholera than a man who is in robust health; although, at the same time, it must be observed that men in robust health are not exempt from either of these diseases. However, my own observations convince me of two important facts—viz. (1), the vast majority of the cases of dysentery and cholera which I have seen were preceded by ague; (2) quinine and sulphuric acid act as prophylactics against dysentery and cholera as well as ague. Such, at all events, has been my experience.

Enteric Fever (*Typhoid*).—Enteric fever ranks next in frequency to ague. It is most prevalent in autumn. From August to November, 1884, I treated 22 cases of this disease; three of these died, two from perforation and one from hæmorrhage. In 1885 I treated nine cases; but there were many others in hospital under the care of different surgeons. The period of incubation varied in these cases from seven to fourteen days; some were mild cases and others very severe. As a general rule, the shorter the incubation the more severe the disease, and *vice versâ*. Well-marked cases had always the well-known peculiarity between the morning and evening temperatures. Iliac gurgling and tympanites were present in every case; so also the characteristic diarrhœa and the peculiar tongue and expression of countenance. The rose-coloured rash was not always observed; but in severe or well-marked cases I rarely found it absent. The cases came from different companies,

and from almost every barrack-room in the station. It is therefore certain the cause of the disease did not occur in one company or barrack any more than another. I analysed the drinking water in September, 1884, and I found that it contained a marked quantity of chlorine and organic impurities, and I have no doubt that bad water is the prevailing cause of this disease. I had an attack of enteric fever myself in January, 1882, and I am certain that my seizure was due to my having drunk non-filtered water.

From amongst the fatal cases of typhoid which occurred in Quetta I will give a brief abstract of one or two :—

Case I.—Private E. T., aged twenty-two, was admitted to hospital September 3rd, 1884. For about six days before admission he felt sick, feverish, and indisposed. On admission the symptoms were as follows :—Seven motions daily; diarrhœa characteristic; gurgling, pain, and tenderness in the right iliac region; two rose-coloured spots on front of the chest. Evening temperature, 102·4°; pulse, 103. Ordered mixture of chlorate of potassium.

September 4th.—Patient has been very restless during the night; motions only four. Morning temperature, 102°; evening temperature, 103°. Chlorate of potassium continued.

6th.—Patient went six times to the stool during the last 24 hours; delirium present. Morning temperature, 103°; evening temperature, 103·8°.

7th.—Patient went seven times to the stool during 24 hours; he is very deaf. Morning temperature, 101·8°; evening temperature, 102·8°. Delirium still present. Medicine changed to sulphuric acid mixture.

8th.—Patient very restless; bowels moved very frequently. Morning temperature, 103·8°; evening temperature, 104·4°. Ordered mist. cret. in combination with tinctures of catechu and opium. Sordes collected on the teeth, and the abdomen was very tympanitic; pulse, 108.

9th.—Patient very low. Pulse, 140, weak and compressible; morning temperature, 103·8°; evening temperature, 104·4°. Countenance livid; tongue dry, brown, and fissured; patient protruded his tongue with great difficulty; picking at the bed-clothes; low muttering delirium present; cold perspiration bedewed the body; abdomen very tender; motions still very frequent and tinged with blood.

10th.—Patient got a profuse attack of hæmorrhage from the bowels—passed under him in bed—and died in a state of coma at 3 30 this morning.

The *post mortem* revealed intense congestion of the small intestines and great ulceration of Peyer's patches.

Case II.—Private T. H., aged twenty-two, was admitted to hospital suffering from fever on September 1st, 1884. On September 3rd his symptoms were as follows:—Pulse, 120; morning temperature, 101·4°; evening, 102·4°. Diarrhœa characteristic; eight motions daily; tongue brown and dry at the tip and centre; gurgling, pain, and tenderness in the right iliac fossa; no rash present. Ordered chlorate of potassium mixture.

September 4th.—Diarrhœa less frequent. Morning temperature, 101·8°; evening temperature, 103°. Ordered 10-minim doses of turpentine thrice daily.

5th.—Bowels moved twice during the night. Morning temperature, 102°; evening temperature, 103·4°. Tongue very dry and fissured, and sordes have collected on the teeth.

6th.—Patient has been three times to the stool during the night. Pulse, 96; morning temperature, 102°; evening temperature, 103·4°. He is very deaf.

11th.—Since last note the patient seemed to have been doing well. But last night he suffered from great restlessness, and there was some delirium; bowels moved six times; the side of his face is greatly swollen.

13th.—The swelling is very great. Poultices, fomentations, and leeches were applied. The diarrhœa is very troublesome. Morning temperature, 105°; evening temperature, 104·4°. Ordered mist. cret.

15th.—Patient very low; pulse, 148, weak, and compressible; low muttering delirium present. Ordered diffusible stimulants.

16th.—Patient died this morning at 5 o'clock in a state of collapse.

The *post mortem* revealed extensive ulceration and sloughing of Peyer's patches, and at the lower end of the small intestine a perforation was detected. Fæces were extravasated into the abdominal cavity.

Case III.—Private Arthur K., aged twenty-four, was admitted to hospital suffering from fever on August 3rd, 1885. On August 9th his symptoms were as follows:—Rose-coloured rash present on abdomen; gurgling in both iliac fossæ; tongue dry and brown; slight delirium present; diarrhœa characteristic. Ordered sulphuric acid mixture.

August 10th.—Diarrhœa much less severe; no delirium during the night.

13th.—Has had a crisis last night, when the temperature went up to 104°. He now suffers from profuse perspiration, which necessitates his shirts being changed every hour. Temperature this morning, 100·6°.

20th.—The temperature has steadily fallen since last note; it is now 98·4°; pulse, 108; the tongue is now commencing to clean—a few fissures alone exist. He is presently taking turpentine.

22nd.—He continues to improve; diarrhœa has entirely ceased; temperature normal.

28th.—Temperature continues normal; his appetite is very good; no complications.

This man had a favourable convalescence, and was discharged to duty.

I could multiply these cases; but I dare say that sufficient has been said to show that the disease is very similar to that seen in England; the only difference being that the rash is not always present in cases which occur in this country. The case of Private H. illustrates this fact. Amongst the few fatal cases which occurred in my practice, death occurred from perforation in all but one. Perforation, I find, occurs most commonly between the 16th and 21st day of the disease. The perforation was usually about the size of a threepenny piece, and always existed at the centre of the ileum. Fæcal matter was found as a general rule in the cavity of the peritoneum.

Dysentery.—Dysentery is a very common disease in Quetta. It has also been found to be a most intractable and fatal disease. It usually commences in an attack of mild, bilious diarrhœa, then the patient passes some blood and slime, troublesome tormina and straining set in, and the patient goes twelve or fourteen times daily to the stool. At first the motions are scanty, mucoid, and stained with blood. During the course of the disease the stools become more bloody and copious, and are horribly offensive. There is great tenderness and pain along the course of the colon. Towards the close the diarrhœa becomes so persistent that the most powerful astringents cannot arrest it; the patient rapidly loses flesh; hepatic complications set in; exhausting hectic occurs, and death in bad and very acute cases takes place in the third or fourth week of the disease. A brief survey of a few cases will best illustrate this disease:—

Case I.—Private William J., aged thirty-one, was admitted to hospital on August 23rd, 1885. Diarrhœa was then very troublesome, and he passed a little blood and slime. The ipecacuanha treatment was employed, and on August 29th he seemed to have greatly improved. The diarrhœa was much less troublesome; but he now complained of pain and tenderness over the liver, which was enlarged. Ordered fomentations, to be applied thrice daily over the liver.

September 2nd.—Half a dozen of leeches were applied yesterday over the hepatic region; they gave great relief. He is now taking Dover's powder, 10 grains thrice daily, and fomentations are continued.

10th.—Patient has got a very sharp return of the diarrhœa to-day. Ordered astringents.

14th.—Patient complains of extreme pain in the hepatic region; also pain and tenderness over the abdomen. Patient states that the enlargement of the liver is of long standing. He was treated for hepatitis in Madras, and has got the marks of old leech-bites in the skin over his liver. Presently he is having poultices and fomentations applied over the abdomen; 10 grains of Dover's powder are administered thrice daily, also 3 grains of acetate of lead and one of opium are given night and morning. At the suggestion of Dr. Bradshaw an injection of decoction of ipecac. and opium was tried in this case, but without any marked effect. Injections of sulphate of zinc, starch, and opium were also given.

16th.—The patient seems to be losing ground. Diarrhœa has returned with increased severity; extreme pain and tenderness extend from the hepatic region all over the abdomen; has lost flesh considerably, and nothing seems to have the power of arresting the diarrhœa. His pulse is flickering, weak, and compressible—140 in the minute; temperature, 103°; cold perspiration bedews the body, and at times he gets very cold. His voice is weak; his tongue brown, dry and fissured. He is getting Dover's powder, acetate of lead, and opium internally; poultices, fomentations, and spongiopiline are applied externally; opium and decoction of ipecac. were again administered by the bowel, and hypodermics of morphia are being given at night.

17th.—All day yesterday the patient remained in a very low condition. He passed under him in the bed, and became semi-unconscious at 3 o'clock p.m. By rousing him a little, however, he protruded his tongue, which was dry and brown. His features became pinched, his eyes dull and sunken. Ordered diffusible stimulants and brandy.

18th.—Patient passed a large quantity of blood by the bowel last night. Ordered ergotin and astringents.

19th.—Patient awfully weak; unable to rise in bed. Pulse very small, and scarcely perceptible; delirium present; some blood still escaping from the bowel. Ordered acetate of lead, opium, and gallic acid by the mouth, and injections of zinc and tannin by the rectum.

20th.—Saw the patient at 10 clock last night, and found that none of the medicines administered had stopped the bleeding or diarrhœa. Injections of sulphate of zinc, tannic acid, and cold water were given every hour, without effect—consequently I gave him a draught containing 20 minims of the liquid extract of ergot and 10 grains of gallic acid, also an injection of sulphate of copper—3 grains to ʒ i.

21st.—The draught of ergot and gallic acid was repeated every second hour yesterday, but last night the bleeding was as bad as ever. Injections of sulphate of copper were repeated every hour, but without effect; hypodermic injections of ergotin were also given, but to no purpose; and when I called to see him at 10 o'clock last night I found him still passing blood. The pulse was very weak, and he had a blanched appear-

ance. I immediately gave him ʒss. of liquid extract of ergot, and 20 grains of gallic acid, and at the same time a hypodermic of ergotin and morphin was given; and an hour later an injection of nitrate of silver—5 grains to the ounce—was thrown up the bowel. This completely arrested the bleeding, but the diarrhœa still continues, and the patient uses the bed-pan every ten minutes. The evacuations are now watery in character. His voice is very feeble; pulse, 148; temperature, subnormal; hands and feet cold; some delirium present. 6 ounces port and 12 ounces brandy allowed, also a liberal amount of milk and beef-tea; Dover's powder, gallic acid, and acetate of lead repeated.

22nd.—Patient has got intense pain over the abdomen. Pulse, 148, weak and compressible. Same treatment continued.

23rd.—At 5 o'clock p.m. yesterday the patient was exceedingly low. Pulse could scarcely be felt at the wrist; the voice awfully weak. Patient still conscious; some diarrhœa present, but no bleeding.

At 10 o'clock last night I again visited the case. He was very low indeed. Hands cold, face ghastly pale; pulse, 160; low, muttering delirium present. Poultices and fomentations applied, and stimulants and astringents administered.

The patient lost ground steadily during the night; the pulse got weaker and weaker; the low muttering continued. He died this morning at 6 o'clock.

The *post mortem* revealed extensive ulceration of the large intestines; the ulcers were all in a sloughing condition—in fact, the colon and rectum were so rotten that they fell in pieces during the act of removing them from the body. The liver weighed 4 lbs.; it was greatly enlarged; it contained an old cicatrix and several pyæmic deposits. The lungs weighed each 1 lb. 14 ozs.; they were highly congested. The other organs were healthy.

Case II.—Private William B., aged twenty-two, was admitted to hospital August 9th, 1885, suffering from simple bilious diarrhœa. Acid astringents were given, and the patient seemed to be doing well, till September 1st, when symptoms of dysentery developed. Accordingly, the patient was put on the ipecac. treatment. Large doses of ipecac. (40 grains) were given at first, followed by 10-grain doses of Dover's powder.

September 7th.—Patient not much improved; diarrhœa still very troublesome; still passing blood and slime; complains of severe pain in the abdomen; pulse, 120; temperature, 101°. He is presently having poultices and fomentations applied to the abdomen; Dover's powder, tannic acid, and opium are given internally; decoction of ipecac. and opium are given by the bowel, and a sleeping draught of chloral and morphin is given every night; milk diet; beef tea and brandy is allowed

11th.—Severe pain and tenderness still present over the abdomen; pulse, 144, weak and compressible. Same treatment continued.

16th.—Patient exceedingly low this morning; is constantly on the stool; nothing will stop the diarrhœa—lead, opium, zinc, nitrate of silver have been tried, but without any appreciable result. Pulse, 148, very small and compressible. He is so weak that he is unable to sit up in bed. Ordered stimulants and astringents, together with sulphate of zinc and opium enemata.

17th.—This man got steadily lower and lower, and died at 9 o'clock last night.

The *post mortem* revealed multiple abscess of the liver and extensive ulceration of the large intestines.

Case III.—Private Arthur L., aged twenty-two, was admitted to hospital August 6th, 1885, suffering from fever and diarrhœa. About ten days after admission he commenced to pass blood and slime. He was at once put on the ipecac. treatment.

September 13th.—The diarrhœa is still very troublesome, and the motions contain blood and slime. He is getting Dover's powder, acetate of lead, and opium.

15th.—Still very much troubled with diarrhœa, and has got great pain and tenderness in both iliac fossæ. Poultices and fomentations are applied four times daily; they give relief; Dover's powder and small doses of lead are given every fourth hour; also enemata of starch, opium, and tannic acid; milk diet; brandy and port wine allowed.

17th.—Patient appears to be losing ground. Pulse, 156, weak and compressible; temperature, 103°. He is scarcely able to stand. The calls to relieve nature are less frequent, but the evacuations are more offensive and profuse: still great pain and tenderness over the abdomen. Fomentations and poultices continued; Dover's powder and astringents given by the mouth, and zinc injections by the rectum.

21st.—Injections changed to sulphate of copper, 3 grains to ʒ i.

27th.—Patient has very severe pain in the hepatic region, and some sore throat. Ordered a sinapism, to be applied over the liver and to the throat.

30th.—Patient very low. Same treatment continued—viz., Dover's powder and astringents.

October 1st.—Patient extremely low; pulse, 160; temperature, 102°; sordes on the teeth; low muttering delirium present; passing under him.

2nd.—Extreme pain in the abdomen. Poultices and fomentations continued, also astringents, and sleeping draughts of chloral and morphin at night; enemata changed to nitrate of silver—5 grains to ʒ i.

3rd.—Patient awfully low; no hopes entertained for his recovery.

4th.—The patient died during the night, and the *post mortem*, made

this morning, revealed multiple abscesses of the liver and extensive thickening and ulceration of the large intestine. The bowel was black and gangrenous at the ileo-cæcal valve, and a few ulcers were noticed at the lower end of the ileum.

Case IV.—Private David F., aged twenty-four, was admitted to hospital on August 21st, 1885, suffering from dysentery. He was put on the ipecac. treatment on the first appearance of the symptoms.

September 8th.—The tormina, straining, and diarrhœa are much more troublesome, and the patient complains of great pain and tenderness all over the abdomen.

9th.—The patient has been getting still worse for the last day or two.

11th.—Diarrhœa very persistent; pulse, 144, weak and compressible; temperature, 103°; tongue dry and coated; abdomen exceedingly tender; some delirium present; liver enlarged. He is getting 10 grains of Dover's powder thrice daily; enemata of decoct. ipecac. cum opio are given at night, also a sleeping draught, and at intervals of four hours small doses of zinc and opium are administered; poultices to abdomen, &c.

15th.—Patient very low; calls to relieve nature very troublesome and persistent; delirium still present.

16th.—Delirium, low and muttering; eyes very sunken; sordes on teeth; passing under him in the bed.

17th.—Patient exceedingly low; pulse, 160, weak and flickering; low muttering delirium present; tongue very dry and fissured; features pinched. He remained in this condition till 3 o'clock p.m., when the pulse became almost imperceptible. He now lapsed into a semi-unconscious state, and died at 4 30 o'clock p.m.

The *post mortem*, which was made at 6 o'clock the following morning, revealed as follows:—Liver enormously enlarged and congested, weight, 6 lbs.; on the under-surface of the right lobe there existed a broad dark-coloured patch. On cutting through this, dark blood-stained pus exuded. Had the patient lived long enough this would have developed into an abscess. The rectum and colon were one continuous mass of ulcers. These ulcers were to be seen in all stages of development—from patchy ecchymoses to sloughing. The bowel was very thick and sodden, especially at the ileo-cæcal valve. The other organs were healthy.

It is a remarkable fact in connection with this disease that in every case of dysentery which I have seen there was an hepatic complication. This leads me to believe that there must be some connection between hepatitis and dysentery. One thing is certain—that wherever hepatic diseases occur there dysentery will also prevail; and as the ulceration which occurs in enteric fever does not produce abscess of the liver, so I believe that dysenteric

ulceration cannot be the only cause of the hepatic lesions found in connection with this disease. On the contrary I am of opinion that hepatitis leads to dysentery more frequently than the latter leads to the former. In other words, I believe that hepatitis will cause dysentery, though I do not deny that dysentery produces multiple abscess of the liver.

There is a point in connection with the treatment of dysentery which deserves a passing notice—viz., that unless ipecacuanha is given in large and repeated doses at the very onset of the disease, this drug is of very little use in arresting its progress. However, in the early stage ipecac. is a most valuable remedy; and I am of opinion that when dysentery is prevalent, ipecac. ought to be given as a prophylactic in every case of congestion or inflammation of the liver.

Cholera.—Cholera may justly be classed next in point of fatality to the disease (dysentery) just described. This disease is very prevalent in the Hurnai and Bolan Passes. In October, 1884, the natives employed on railway works in the Hurnai died of cholera in great numbers, and a medical officer of the A. M. S. (Surgeon Day) was sent to the Hurnai from Quetta on special cholera duty. In November and December of the same year the 98th Regiment (after the Zhob Valley expedition) were marching down the Bolan Pass—on relief by the 47th Regiment—when cholera broke out amongst them. On this occasion the 98th lost 36 men from cholera, which was contracted in the Bolan Pass. In April, 1885, cholera appeared amongst coolies and others employed on railway and transport work in the lower Bolan, and in May of the same year I was sent down the Bolan as sanitary officer on special cholera duty. The disease at this time had spread up the Pass, and was gradually advancing to Quetta. It is supposed to have been conveyed to Quetta by native drivers of the Transport Department. The first case which occurred in Quetta was that of a Lascar. A private of the 43rd was attacked on June 3rd, and on June 6th a child was seized; both cases speedily proved fatal. The epidemic now commenced in real earnest, and continued with some intermission till the middle of October. The type was most fatal, the percentage of recoveries being very small. I remained on cholera duty in the Pass from May 26th to July 8th; during that time I saw some 50 cases of cholera in natives and 10 in Europeans; one of these was an officer's servant, two others were British officers; the servant and one officer recovered,

the other officer died. On July 8th I was sent in medical charge of a siege train to Chuman, and I returned to Quetta on August 4th. During this march with the Amir's siege train five cases of cholera occurred; one was a Sepoy belonging to the 26th N. I., two were gunners, and the remainder Transport drivers. When I returned to Quetta I saw 10 more cases of cholera, 7 of which were treated by me at the station hospital. From amongst the fatal cases which I saw I will here give a brief sketch of three or four:—

Case I.—While on special duty in the Bolan in 1885 I treated Capt. C., R.E., aged thirty-four, for ague, on two occasions. These attacks were very sharp, and were accompanied by vomiting and slight diarrhœa. This officer lived at Mach, a station in the Bolan Pass, forty miles from Quetta. On June 26th he exposed himself a good deal in the sun, and rode seventeen miles to Derwaza, where he drank some water. The next day he felt very sick, and suffered from slight diarrhœa. I happened to pass Derwaza on the evening of June 27th, and was called in to see him. His eyes were sunken and his voice was very weak, but beyond these symptoms there was nothing else in his appearance to attract suspicion. He was dressed, walked about the bungalow, conversed freely, and seemed to make slight of the diarrhœa and indisposition which he suffered from during the day, alleging that they were due to his having walked and ridden a good deal in the sun during the previous day. However, I gave him an astringent draught, and determined to stop with him for the night. At 8 o'clock p.m. the diarrhœa became very profuse. I examined the motions; they were amber-coloured, very watery, and horribly offensive. I gave him a drachm of chlorodyne and an ounce of cholera mixture, and put him to bed. This draught was repeated every hour, and small doses of brandy and champagne were also given at short intervals, but the patient could not keep them down. At 11 o'clock p.m. the vomiting became very distressing, and the diarrhœa gushed from him without an effort. Both the motions and vomited matter were quite watery, and he now experienced some cramps, which commenced in the big toes and travelled up to the calves of the legs. Friction was employed, and cholera mixture and stimulants were continued. At midnight the voice became awfully weak and sepulchral-like; the eyes were surrounded by a dark-coloured areola, and were greatly sunk and very dull; the skin was bathed in a cold clammy sweat; the pulse, which was all along weak and compressible, was now scarcely perceptible; the cramps, which were hitherto confined to the legs, now attacked the hands and arms; the diarrhœa was less profuse, but the stomach rejected everything. At 1 o'clock a.m. the cramps attacked him along the spine and at the back of the neck; and he now cried out

in that peculiar weak and whispering voice, "I am getting lock-jaw." Friction, with mustard and sinapisms to the back and loins, were applied, and I gave him a dose of opium, but the stomach immediately rejected it. At 3 o'clock a.m. he could not be got to take either medicine or stimulants; the hands and feet were awfully cold and the pulse imperceptible; hot-water bottles were applied to the feet and stomach; hiccough occurred, and he passed under him. At 5 o'clock he became perfectly unconscious; death from coma occurred three hours later.

Case II.—Gunner James O'C., 7/1 R.A., aged twenty-five, while on the march with the Amir's siege train, was attacked at Deni Kharez, on July 12th, 1885, with severe vomiting and purging. He was immediately given cholera mixture, which was repeated every half-hour; small doses of brandy were also administered. At 3 o'clock p.m. violent cramps set in, which were relieved by friction. At 6 o'clock p.m. the vomiting and purging had ceased, and the cramps were less severe; the pulse, however, was weak and thready, the extremities and breath cold, the eyes sunken, and the nails blue. Beef-tea and stimulants were continued. At 2 o'clock a.m. on July 13th the diarrhœa and vomiting occurred with increased violence, the patient passed under him, and the stench of the tent in which he lay was something never to be forgotten. He appeared to be sinking, and accordingly I gave him some diffusible stimulants, and astringents; the stomach, however, rejected them. Treatment was continued, and cholera mixture and brandy were given every hour. At 5 o'clock a.m. the cramps were very violent, and I gave him a dose of opium; he fell into a sound sleep, and at 9 o'clock a.m. there were no cramps, and the vomiting and purging had ceased. At 5 o'clock p.m. he was greatly improved; the pulse was strong, and no cramp, vomiting, or purging occurred during the day; the only bad symptom present was suppression of urine. At 4 o'clock a.m. on July 14th the siege train continued the march to Goulistan, and as it was impracticable to leave him behind he was carried on in a doolie. He arrived in Goulistan in the same condition. The same tent was now pitched half a mile from the regular camping ground, and he was put to bed. At 12 o'clock noon his pulse was strong (120), his tongue brown and coated, his eyes still sunken, and his lips covered with sordes. At 6 o'clock p.m. troublesome hiccough set in, and he complained of pain in his chest and throat. I gave him some opium, he went to sleep, and had a fairly good night. At 6 o'clock a.m. on July 14th the pulse was very good, but the hiccough was still troublesome and persistent. A mustard poultice was now applied to the stomach. At 9 o'clock a.m. I gave him some cholera mixture and opium, and at noon he was in a sound sleep; the hiccough now ceased, and there was no vomiting or purging. He took his beef-tea and brandy well at 5 o'clock p.m., but he did not yet pass any urine.

At 10 o'clock p.m. he became collapsed. The pulse was now imperceptible, the breath and extremities cold, and the respirations loud and laboured. Diffusible stimulants were given; they revived him a little, and the pulse again came to the wrist. At 4 o'clock a.m. on July 16th he was unconscious; the pulse could be felt, but the hiccough returned. At 9 o'clock a.m. he was pulseless, and he could not be got to take either food or medicines. There was some twitching about the face and hands, the eyes were awfully dull and sunken, the nose and extremities cold and livid, and he was perfectly unconscious. He remained in this state till 1 o'clock p.m., when death closed the scene.

Case III.—Gunner W. T., aged twenty-three, when on the march with the Amir's siege train, got an attack of fever and diarrhœa, and was treated accordingly. Two days later (July 14th, 1885), at 10 o'clock a.m., he was seized with violent vomiting and purging; the motions and vomited matter were watery in character. Recognising the nature of the disease, I had the patient immediately removed to the cholera tent, where the usual treatment was employed. At 4 o'clock p.m. his pulse was 140, and very feeble; his nails were blue, and his tongue covered with a brown fur. At 7 o'clock p.m. he was worse, and passed some blood. At 10 o'clock p.m. the vomiting ceased, but the pulse was very weak. Brandy, rum, and cholera mixture continued. At 5 o'clock a.m. on July 15th his pulse was scarcely perceptible; the extremities were cold and clammy, the tongue brown and dry, sordes collected on the teeth, and the diarrhœa and vomiting returned. He refused to take the cholera mixture. I gave him a diffusible stimulant, which he kept down. One of his legs was quite blue. At 11 30 a.m. he suddenly became faint, and died in a few minutes after.

Case IV.—Gunner Patrick M'G., 9/1 R.A., aged twenty-seven, was admitted to the Station Hospital, Quetta, on September 30th, suffering from ague. At 2 o'clock a.m. on October 4th he was seized with violent vomiting and purging; these were, as is usual, painless in character, and the motions rushed from him without an effort. When I saw him his eyes were sunken, his face pinched, his pulse weak and compressible, his voice low and whispering; the surface of the body was cold and clammy, and the patient was still purging and vomiting. I gave him some cholera mixture, and had him immediately removed to the cholera tent. At 10 o'clock a.m. the voice was still very low, the eyes sunken, the pulse scarcely perceptible, urine suppressed. Ordered stimulating diuretics, diffusible stimulants, hot-water bottles to the feet, and sinapisms to the back and loins. At 1 o'clock p.m. he was almost pulseless; diarrhœa very persistent. Same treatment continued. At 5 o'clock p.m. he was quite pulseless, and was passing under him in the bed. He was very

restless, and rolled his head from side to side. Ordered mustard to the nape of the neck, legs, and abdomen. At 10 o'clock p.m. undoubted head symptoms were present; the eyes were awfully sunken, and the breath and extremities cold; there was no pulse, and no sign whatever of reaction. Stimulants and diuretics continued. At midnight he rolled his head a good deal, but could not speak or take medicine. I gave him a hypodermic injection of ether. He never rallied. Death occurred at 3 o'clock a.m. on October 5th.

Case V.—Private William P., aged twenty-six, was admitted to the Station Hospital, Quetta, suffering from ague, on August 30th, 1885. When going the rounds on the morning of September 7th I noticed that his eyes were sunken, and that he had the peculiar choleraic expression of features. On inquiry I found that he had been vomiting and purging since 2 o'clock that morning. The stools were very characteristic, being the real "rice"-water stool. The pulse was very weak, and a cold, clammy sweat bedewed the body. I had him at once removed to the cholera tent, where the usual cholera treatment was employed—viz., cholera mixture, brandy, beef-tea, and sinapisms. I also tried the following mixture in this case, but without any apparent benefit:—

℞. Tinct. Catechu, ʒiii.
Spirit. Ammon. Aromat., ʒii.
Tinct. Cardamomi Co., ʒiii.
Tinct. Opii, ʒi.
„ Capsici, ♏xx.
Mist. Cretæ, ʒx.
M. A tablespoonful every half hour.

The diarrhœa persisted; violent cramps occurred ten hours before death; these were followed in five hours by collapse. Hypodermic injections of ether were tried, but without effect. The patient gradually died from exhaustion.

I could give many more cases, but I think sufficient has been said to show the nature of this terrible disease. During a cholera epidemic every one is more or less panic-stricken, because a man may be in the prime of health to-day, and to-morrow the grave may open to receive him. Old and young, weak and strong, are attacked indiscriminately. Treatment, unless when employed in the very earliest stage, seems to be of no avail. Should recovery take place, it will generally do so in twenty-four hours; should the disease be longer protracted, collapse and death are almost certain to supervene. The natives make little or no fight against the disease. When once attacked they die rapidly. I have often gone for a morning ride in the Bolan, and I found natives dead

on the roadside; cholera had overtaken them on the road, and they rapidly succumbed.

As regards the symptoms of cholera, I think it may be justly stated that they are unmistakable. Profuse vomiting and purging, accompanied by a peculiar shrinking of the eye and choleraic expression of countenance, are present in every case. The motions and vomited matter are usually what has been described in the books as the "rice-water stools," but not uncommonly they are watery and amber-coloured. The stools are always "watery" in character, but in my experience they have varied in colour from greyish white to amber. The diarrhœa is painless in character, and rushes from the bowel without an effort. Cramps occur in the vast majority of cases; these at first commence in the legs and arms, and gradually extend to the spine; they are spasmodic in character. A great many cases occur in which there are no cramps whatever; such cases are very remarkable for an early appearance of head symptoms. The urine is almost always suppressed; in favourable cases the first good sign is the secretion and evacuation of urine; in bad cases, violent cramps, pain in the throat, hiccough, and collapse, precede the fatal termination.

As to treatment, chlorodyne, when given in the early stage, seems to be a medicine of great value, but it must be taken on the first appearance of the symptoms and in full doses. I have known several cases to recover in which chlorodyne was taken when vomiting and diarrhœa appeared; one was the case of Lieut. P., R.A.; he is the son of a London doctor, and had a knowledge of the therapeutic action of drugs. He drank water, and at 2 o'clock on the night of the 6th July he was attacked with cholera; he at once swallowed half an ounce of chlorodyne. I saw him a few hours later; he had all the symptoms of cholera, even to the cramps; he made a speedy recovery, and I attribute the success of this case to the chlorodyne. When the disease is fully established reliance must be placed on astringents, diuretics, and counter-irritation. As regards prophylactics, quinine and dilute sulphuric acid are undoubtedly the best. Avoidance of exposure in the sun, and, above all, great care and discrimination in all articles of food and drink, must for obvious reasons be enforced.

This leads me to say something as to the manner in which cholera is communicated. Leaving the "bacillus" question altogether out of consideration, there can be no doubt but that the cholera poison, whatever it may be, is introduced into the system by food

and drink. The only other channel by which it could be introduced is the lungs; but the sweepers who carry away the dejecta of cholera patients, and the grave-diggers who bury these subjects do not get cholera. Besides, orderlies and nurses who stop for hours in succession at the bedside of cholera patients, and who even use the same night-stool, and breathe the same air, have never, to my knowledge, got cholera. Therefore, it seems to me that the stomach is the only channel by which cholera can be introduced; and in all the cases which I have seen there was an undoubted history of the patients having drank cold and unfiltered water; consequently, I am of opinion that water contaminated by the cholera poison is the great medium by which cholera is conveyed and communicated. When natives travel in the country they carry water about with them from place to place in their leathern water-bottles, and it is a well-known fact that when a native is attacked with cholera he repairs to the nearest spring to quench his thirst. Such a man will pollute the drinking-water to a moral certainty. I have personally seen a native (Sepoy), suffering from cholera, go to a spring to drink. He vomited into the water, and the motions rushed from him on the bank of the stream without his being able to prevent them. It is therefore certain that the Bheestie who came next and carried that water off in his leathern "purchaul" for distribution was almost certain to spread the disease. Besides, numerous native graveyards are to be seen in the Bolan and Hurnai Passes, standing in the beds of the rivers and in the immediate vicinity of springs. Cholera subjects buried in such localities are, in my opinion, certain, in the course of time, to contaminate the water, because, if there be any truth in the "bacillus" theory, the first rain-fall carries the germs of disease into the adjoining springs. These springs, as we have seen, are all thermal, and, consequently, favour the growth of bacilli. However, the remedy is quite evident, and I must confess I have never known a man who was careful to boil and filter his drinking-water to get cholera.

I do not know why it is that the lower animals are so exempt from cholera. A dog of mine on one occasion lapped up the vomited matter of a cholera patient, and yet never showed the slightest signs of the disease. I believe the reason is (as explained by Professor Koch) that the acidity of the secretions in the stomachs of the lower animals kills the bacilli.

[*To be concluded.*]

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Researches upon the Venom of Poisonous Serpents. By S. Wier Mitchell, M.D., and Edward T. Reichert, M.D. Washington. Published by the Smithsonian Institution. 1886. 4to. Pp. 186.

This able and laborious monograph is unquestionably the most valuable contribution which has as yet been made to our knowledge of snake poisons. The authors have had upwards of two hundred living snakes, whose venom they have examined. Of these there was a large number of rattle-snakes, including *Crotalus adamanteus* and *C. durissus*, several mocassins (*Ancistrodon piscivorus*), and smaller numbers of ground rattle-snakes, copperheads, and coral-snakes. A supply of cobra poison also was obtained from India. "The authors started with a theory long held by Dr. Mitchell that such venoms are not simple in composition, but composed of two or more poisonous substances, and that in the qualities and quantities of these agents would be found an explanation of the differences between serpent venoms as to power to kill and mode of causing death." It was found that the solid matter suspended in the fresh venom was free from poisonous action. Injections of pure cultures of the micrococci constantly found in venom were without effect. The poisonous matter must consequently exist in solution. A search for alkaloids was without result. The venoms, however, contain proteid substances, and it is to these that the poisonous properties are due. They are of two classes—namely, globulins and peptones. Of the former, three kinds were separated—one by addition of distilled water, another by dialysis, and a third by the cautious addition of cupric sulphate. They are called respectively water-venom-globulin, dialysis-venom-globulin, and copper-venom-globulin. Their chemical characters are very fully described in the second chapter. After the separation of the globulins the residue gives no precipitate on boiling, but still

shows proteid reactions. These are due to the presence of one or more peptone-like bodies, whose properties, as they are met with in the different venoms, are fully detailed.

The relative proportions of globulins and peptones differ very much in different venoms. In that of the American snakes the globulins preponderate, while in the cobra peptones are in largest quantity. We shall see that the different local and general effects of these venoms are owing to these differences in composition.

In the third chapter is detailed a very extensive research on the effects of various agents on the activity of venom. Of all the substances examined, permanganate of potassium was found to be the best local antidote for all such poisons. Ferric chloride was found to be very efficient for those venoms which owe their poisonous properties to globulins, while for the cobra poison, which is chiefly a peptone, it was of little use. Bromine and strong alkalies were also found efficient.

When venom is brought into contact with the mucous membrane of the stomach or crop in the intervals of digestion, sufficient absorption may occur to prove fatal. This is more apt to occur with the diffusible peptone than with the indiffusible globulin, but even in the case of the former the influence of the gastric secretion is often sufficient to destroy the poison before its absorption.

When applied to a serous surface, venom causes, among other effects, numerous hæmorrhages from the small vessels.

When brought into contact with living tissues, venom excites a powerful local effect, and causes more rapid necrotic changes than does any other organic substance known. Œdema, swelling, hæmorrhage, putrefaction, and sloughing quickly occur, and the blood is rendered incoagulable. The hæmorrhages are due to an alteration in the walls of the small vessels, in consequence of which they become unable to resist the pressure of the blood. If, however, salt solution be substituted for blood, extravasation does not occur. The red corpuscles become spherical and softened, and run together, so as to form a gelatinous mass. This condition of the corpuscles doubtless favours the extravasation.

If the mesentery be exposed freely to the air while under the action of the venom, the extravasations and other effects of the latter are less marked than when the poison is injected into the unopened abdomen. This is mainly due to the influence of oxygen in the case of the exposed membrane.

The local effects of the venoms on the tissues and the changes

in the blood corpuscles are illustrated by beautifully executed coloured plates.

A very large number of experiments are recorded on the influence of the pure venoms, and of the globulins and peptones on the pulse-rate, blood-pressure, respiration, and on the nervous system. The effects on the pulse show themselves in a primary hastening, followed by a slowing. The first is due to an influence on the accelerating centres, and is usually absent when the heart is isolated by section of all its nerves; the secondary slowing is due to a direct action of the poison on the heart itself.

The blood-pressure shows at first a considerable fall, which may persist until death, but is often followed by a rise, to which succeeds a gradual and uninterrupted decline. This secondary rise is more pronounced when cobra venom is employed than when the animal is poisoned with the venom of the rattle-snake or mocassin. "The variations in arterial pressure are due chiefly to three causes—depression of the vaso-motor centres, depression of the heart, and irritation and consequent constriction or blocking up of the capillaries. It seems not improbable that all of these are consentaneously active, and it therefore follows that such alterations are dependent upon the relative degree of power exerted by any one of these factors. Our results indicate that the profound primary fall of arterial pressure is chiefly due to depression of the vaso-motor centres and is in part cardiac, that the subsequent recovery is capillary, while the final fall is cardiac. The initial fall does not continue, because the constriction of the capillaries is, for a time at least, capable of compensating the depressed action of the central organ of the circulation."

The effects on respiration of venoms is to cause a primary increase, followed by a gradual fall, in frequency. The same effects follow the action of the globulins and peptones, except in the case of the copper globulin, in which the primary rise is absent. This rise does not occur if the pneumogastric nerves be cut. It is due, therefore, to an influence exerted on the periphery of this nerve. The secondary fall is due to a direct paralysing action on the respiratory centres. It is to this that death in most cases of venom poisoning is due; in others, paralysis of the heart, hæmorrhages into the nerve centres, and the alterations of the blood, are important factors in the fatal result.

Except the action on the respiratory centre there are no very important direct effects produced on the central nervous system.

In the study of the pathological changes produced in the different organs it was found that it was always the parenchymatous elements which underwent alteration, while the interstitial parts remained unchanged or were merely infiltrated with the extravasated blood.

"A general survey of the chief physiological actions of venoms leads us to believe that the most important effects are upon the respiratory and circulatory apparatuses, and that in the production of these results antagonistic factors are at work, so that we sometimes have observations which seem directly contradictory. When it is remembered that there are two classes of poisons in venoms, that each class possesses certain distinguishing physical, chemical, and physiological differences, although closely related, it is easy to conceive the cause of the existence of antagonistic actions and the necessarily varying results."

"A comparative study of the action of the globulins and peptones indicates that the *globulins* produce swelling and blackening of the parts by infiltration of incoagulable blood; they are the more potent in producing ecchymoses, in destroying the coagulability of the blood, in modifying the red corpuscles, and in the production of molecular changes in the capillary walls; their action on the accelerator centres of the heart is more notable than that of the peptones, hence they are more active in causing the increased pulse-rate; they exert, too, a more marked action on the vaso-motor centres in producing the primary fall of pressure, and are the greater depressants of the heart; they also act more powerfully upon the respiratory centres to paralyse them. The *peptones* are more active in the production of œdema, in the breaking down of the tissues, in the production of putrefaction and sloughing; they have little power to produce ecchymoses, to prevent coagulation, or modify the capillary walls or the blood-corpuscles; they have less tendency to accelerate the pulse; they tend to increase the blood-pressure by irritating the capillaries, and are the principal factor in exciting the peripheries of the vagi nerves in the production of the increased respiration-rate."

These distinctions explain the different pathological changes which are caused by one or the other venom according as the globulins or the peptones preponderate. Since the active principles of the venoms are proteid it would seem idle to search for any *chemical* antidote to the poison once it has reached the circulation, since any agent capable of destroying it there would also destroy the normal proteids of the blood. Our efforts must therefore be directed to the discovery of *physiological* antidotes which may oppose the action of the venoms on the most vulnerable parts of the system.

The Diagnosis and Treatment of Diseases of the Kidney amenable to direct Surgical Interference. By W. Bruce Clarke, M.A., M.B. Oxon., F.R.C.S.; Assistant-Surgeon to St. Bartholomew's Hospital. London: H. K. Lewis. 1886. Pp. 176.

This book is substantially the Jacksonian Prize Essay for 1885, and, though only just published, was almost completed before the standard work of Mr. Henry Morris appeared. It deals exclusively with the surgical aspect of kidney diseases, and gives us, in a concise and clear manner, the present state of our knowledge regarding these affections. The first chapter treats of the anatomical situation of the kidneys and the abnormalities that are of surgical importance. Injuries of the kidneys and ureters are next dealt with. Then follow chapters on New Growths and Parasites. In cases of Hydronephrosis, which forms the subject of Chapter V., when not giving rise to serious trouble, the cyst may be tapped. In more severe cases this palliative measure is discarded and incision and drainage are recommended. Nephrectomy has been performed about thirty times for hydronephrosis; but the mortality of 35 per cent. "is hardly encouraging in view of the safer proceeding of nephrotomy."

In Chapter VI. the author deals with Calculus in the Kidney and the Ureter. The main symptoms which he relies on for diagnosticating a renal calculus are—pain, hæmaturia, pyuria, and irritability of the bladder. These symptoms rarely co-exist all together, some one or other being generally predominant. We may add that pain and tenderness over the region of the kidney appear to be the only constant factors present. The pain in general is not of the acute paroxysmal form which accompanies the passage of a stone down the ureter. When pus is found in the urine, the diagnosis between renal calculus and strumous kidney will have to be made. In discussing the treatment, the author does not enter into the subject of medical treatment, though he considers that it demands a more extended trial. There are two strong reasons why operation in such cases should not be deferred—first, the destructive effects on the kidney itself which the presence of a stone in its substance produces; and secondly, the extremely favourable statistics of nephrolithotomy. About thirty cases had been operated on up to last year, with two deaths. One of these was due to an overdose of morphin; and the other, which was more properly speaking a case of ureterolithotomy, was the result of the blocking

of the other ureter by a calculus. Exploratory operations in which no stone has been found do not appear to have been followed by a single fatal result. Hence these operative procedures appear to be peculiarly safe.

The author very fully and ably discusses the various methods advised for reaching the kidney and removing the stone should such be found to be present, or for excising the organ. He refers especially to the abdominal method recommended by Knowsley Thornton, the lumbar method, and the lateral method. While fully recognising that each method possesses its own peculiar advantages under varying circumstances, he inclines to the belief that further experience will show the lateral method to be best suited for most cases. The incision is semilunar, "from about the tip of the tenth or eleventh rib to the crest of the ilium, with its concavity towards the spine." The advantages claimed for this incision are that the kidney is reached from behind the peritoneum, so that it *may* be opened without injuring that sac, whilst there is ample room to remove the kidney as a whole if desired. If the calculus has passed into the ureter and become fixed there, the author recommends that a small bougie à boule with either metal or porcelain tip should be passed into the ureter through the pelvis of the kidney, and thus the position of the stone can be detected. This will usually be found to be either at the pelvic end or close to the opening of the ureter into the bladder. It will be necessary to incise the kidney either through the pelvis or through its substance—a proceeding which is undoubtedly to be recommended. The various operative procedures on the kidney—Nephrotomy, Nephrolithotomy, Nephrectomy, and Nephroraphy—are fully described in Chapter XI., and are well worth careful study by any surgeon about to attempt any one of these procedures. There is an excellent chapter on Scrofulous Kidney, and the author points out that though operative treatment is frequently demanded, we should not forget that the disease is very frequently bilateral. Before nephrectomy should be adopted, the secreting power of the other kidney should be ascertained. The book closes with a chapter on the methods by which one ureter can be temporarily occluded. Up to the present the different methods recommended do not seem to be sufficiently exact to render them safe guides in determining the secreting power of each kidney.

We think this book is one strongly to be recommended. It

deals with a comparatively new subject, and displays a great deal of originality. It is printed in good, large type, and each subject is introduced in small capitals, so that reference is easy. A large bibliography is appended, which will prove very useful. There are, however, two blemishes in the book which we trust will be remedied in another edition. The index is rather scanty, and the drawings are very bad and not at all in keeping with the rest of the work. We hope in the near future to see Mr. Godart changed for Good Art.

The Medical Annual and Practitioner's Index. Edited by Percy Wilde, M.D. Bristol: John Wright & Co. 1887. Pp. 550.

Nothing illustrates better the almost unexampled progress made in the medical and surgical world during recent years than the volume before us. It is described as "a dictionary of new treatment in Medicine and Surgery, with which is incorporated a Retrospect of the Year's Work in Medicine, Surgery, and Therapeutics." It is specially designed for busy practitioners, who often have no leisure to wade through voluminous journals and sift for themselves the wheat from the chaff. In the "Medical Annual" they will find this already done for them by competent men, who have done their work in an exhaustive, concise, and impartial manner. The book will be found a handy and reliable guide. The subjects are arranged in alphabetical order, and a clear, yet short, description of each is given. The practitioner will find many useful hints for treatment, the merits of the various suggestions being discussed. We can cordially recommend this book, which has been much enlarged. The Dose Index has been improved by the addition of the average price to the drugs mentioned, and the list of the principal medical works published during the year contains many contributions from well-known American writers.

On Tinnitus Aurium, and its Treatment by Electricity. By Julius Althaus, M.D. London: Longmans & Co. 1887.

An interesting pamphlet, and one deserving of attention by physicians as well as aurists. It may possibly be found fault with, as savouring a little too much of the electrical specialist, still the therapeutical results the author claims to have obtained, and the

reasons advanced for the method recommended, should be put to further test by others. Dr. Althaus seeks to make out that in certain cases of that distressing affection, tinnitus aurium—not owing to some curable local cause in the external or middle ear, but due apparently to direct nervous disturbance—the constant current of electricity finds an appropriate sphere of action, and is competent to cure or relieve a considerable proportion of cases.

For details of the method we must refer to the pamphlet, which is an expansion of a paper published in the *Lancet*, July 31, 1886.

A Treatise on Chemistry. By Sir H. E. ROSCOE, F.R.S., and C. SCHORLEMMER, F.R.S., Professors of Chemistry in the Victoria University, Owens College, Manchester. Vol. III. *The Chemistry of the Hydro-Carbons and their Derivatives or Organic Chemistry.* Part III. London: Macmillan & Co. 1886. 8vo. Pp. 388.

THIS volume deals with the aromatic compounds, or compounds rich in carbon. A few years ago very little was known of the constitution of the aromatic compounds, but at present the molecular structure of most of them has been discovered—thanks chiefly to Kekulé, Popow, Zincke, Meyer, Gräbe, Erlenmeyer, Hofmann, Wöhler, Wurster, Ambuhl, Salkowski, Korner, Griess, &c. According to Kekulé the aromatic bodies are derived primarily from a grouping of six atoms of carbon with six atoms of hydrogen. This group is termed benzene, and its carbon atoms are connected alternately by one and two bonds. Carbon is tetratomic, and has four bonds or units of affinity, whilst hydrogen has but one. Each of the carbon atoms in the benzene ring or nucleus has three of its bonds in union with other carbon bonds, whilst its fourth brings it into union with a hydrogen atom. In the whole of the aromatic series we do not find a single one in which there are less than six atoms of hydrogen, which, therefore, we may conclude is, so to speak, the protoplasm of the group. The six hydrogen atoms may, however, be wholly or partially replaced by the atoms of other elements or by compound radicles, such as ethyl or methyl, or by other groups of atoms. For example, the substitution of the group CH_3 for an atom in the benzene ring produces toluene. By substitution in this way, and by further substitution of other atoms or molecules for atoms in the body, replacing the hydrogen of the benzene ring, an immense number of compounds

has been produced. In this way we can ultimately form, from the hydrocarbon benzene, complex nitrogenous and sulphuretted bodies. We have never read more concise or clearer statements in reference to the synthesis and constitution of the aromatic compounds than those contained in the volume before us, and we trust that the time is near at hand when the chemist will be able to throw equal light upon the molecular structure of the carbohydrates and the albuminoids which are yet to a great extent kept in the chemical lumber-room awaiting identification.

Elementary Practical Biology, Vegetable. By Thomas W. Shore, M.D., B.Sc. (Lond.); Lecturer on Comparative Anatomy at St. Bartholomew's Hospital. London: J. & A. Churchill. 1887. 8vo. Pp. 173.

The prominence now so justly given to practical work in medical study has necessitated the production of suitable text-books in each scientific section. The want of suitable books quickly becomes evident to both teacher and pupils, and it was this want of a suitable text-book on Biology for his class that induced Dr. Shore to prepare his book on "Elementary Practical Biology," in which he gives practical directions for working with all the types required in the vegetable part of the Elementary Biological Examinations at the London University. The introduction, consisting of eight pages, gives instruction on section-cutting, staining, and mounting of sections, together with the preparation of reagents, and is of much value to students who are working at vegetable morphology in the country, as the directions are clearly and briefly given.

The work is divided into four parts, in the first of which the author deals with General Vegetable Morphology, and as the specimens are usually ordered to be prepared from easily obtainable plants the student has little difficulty, if working at home, in continuing his studies. Part II. is devoted to the Cryptogamia, and the remainder of the book to the Phanerogams. Everything in the directions to students tells of the trained teacher; nothing is taken for granted, and at each step in his studies the student finds clear and concise instructions for his guidance by one perfectly familiar with the troubles that beset the learner, and an abundance of sound practical information. With such a book the student's path is cleared of many difficulties, and a solid groundwork for further work in this very fascinating subject is laid.

When we remember how much Schwann advanced biological science by study of vegetable morphology, we cannot but hope that the fresh impetus given to the subject will be productive of much good, and to all beginners in this line our advice is to buy Dr. Shore's valuable and inexpensive "Practical Biology."

On Aphasia: being a Contribution to the Subject of the Dissolution of Speech from Cerebral Disease. By James Ross, M.D., LL.D. London: Churchill. 1887. Pp. 128.

This work is for the most part a reprint of papers which have appeared in the *Medical Chronicle.* Nearly half of it is occupied by a record of cases illustrating the different varieties of aphasia. These are full of interest, and will well repay the most careful study. This is followed by sections on the nature and seat of the lesions in the brain which cause disturbances of speech. As none of the author's cases yielded a *post mortem* examination he has had in this part of his work to avail himself of the results got by other observers. This he has done with great judgment and learning. He places the lesion in so-called ataxic aphasia—or, as he terms it, aphemia—in Broca's lobe or the posterior extremity of the third frontal convolution. In motor agraphia the lesion is situated at the posterior extremity of the second frontal convolution and the corresponding part of the ascending frontal gyrus; in word deafness, in the superior temporo-sphenoidal convolution; in word blindness, in the angular gyrus and inferior parietal lobule; and in verbal amnesia in the second and third temporo-sphenoidal convolution. In all cases the lesion is on the left side.

The sections on the morbid physiology and theories of aphasia are of great interest, and in them is to be found an able criticism of the views of other writers, as well as a new theory by the author, which will, we think, be generally admitted to be, as believed by Dr. Ross himself, "more harmonious in all its parts than any which have hitherto appeared." It would be impossible for us, in the space at our disposal, to reproduce Dr. Ross's arguments. We can only state broadly that he holds motor aphasia and agraphia to be paralytic affections in which the ordinary movements of the organs of articulation and of the hand are not lost, but those highly specialised movements concerned in speech and writing. So apperceptive or sensory aphasia is to be looked on as a sensory paralysis.

It would be impossible to praise too highly the descriptions of the different degrees and varieties of motor and sensory aphasia. They could not be excelled in their clearness and accuracy. The understanding and recollection of this difficult subject is greatly facilitated by tabular statements, in which are summarised the necessarily lengthy descriptions. As an example of those tables we append those in which are given the symptoms of the five degrees of motor aphasia and of agraphia.

Aphemia.

The Faculties of Spoken Speech	Varieties				
	1st degree	2nd degree	3rd degree	4th degree	5th degree
1. Spontaneous vocal speech in sentences - -	Impaired	Lost	Lost	Lost	Lost
2. Repetition of words and reading aloud - -	Retained	Retained	Lost	Lost	Lost
3. A few intelligent replies to questions in single words - - -	Retained	Retained	Retained	Lost	Lost
4. Occasional and recurring utterances of no speech value - - -	Retained	Retained	Retained	Retained	Lost
5. Grunting sounds and syllabic utterances not forming any word -	Retained	Retained	Retained	Retained	Impaired

Motor Agraphia.

The Faculties of Written Speech	Varieties				
	1st degree	2nd degree	3rd degree	4th degree	5th degree
1. Spontaneous writing in sentences - -	Impaired	Lost	Lost	Lost	Lost
2. Writing to dictation and copying sentences -	Retained	Retained	Lost	Lost	Lost
3. Writing and copying imperfectly a few single words - - -	Retained	Retained	Retained	Lost	Lost
4. Writing letters of the alphabet - -	Retained	Retained	Retained	Retained	Lost
5. Copying geometrical figures - - -	Retained	Retained	Retained	Retained	Impaired

The table giving the disorders of the apperceptive and expressive faculties in the varieties of sensory aphasia is equally comprehensive and instructive. It is, however, too long to reproduce here.

In conclusion, we would most cordially recommend this work to our readers as giving, probably, the best account of aphasia which is to be found in the English language.

A Text-book of Pathological Anatomy and Pathogenesis. By ERNST ZIEGLER. Translated and Edited for English Students by DONALD MACALISTER, M.A., M.D. Part II. Special Pathological Anatomy. Sections IX.–XII. London: Macmillan & Co. 1886. Pp. 391.

IN this concluding volume of the translation of Ziegler's Pathology are contained the articles on the urinary organs, the respiratory organs, the central nervous system, and the peripheral nervous system, together with a general index of authors and subjects for the entire work. The text is illustrated by 89 figures, many of which are of great beauty.

We can only speak of this volume in terms of praise similar to those in which we noticed the two earlier parts of the work. The popularity of Professor Ziegler's book is now so great, and its reputation so deservedly high, that any commendation of it is quite superfluous. The translator has in this volume manifested the same care and judgment which were so abundantly displayed in the earlier parts of his work. He has decided not to translate the sections of the original work which deal with the pathological anatomy of the eye, ear, bones, muscles, and genital organs. These sections are, it is true, not written by Ziegler himself, but as they have been prepared by well-known and able authors under his direction, and as they deal with very important subjects, we think it is to be regretted that Dr. Macalister cannot see his way to making them accessible to English readers.

It is much to be regretted that there has been so long a delay in the completion of this translation. While it has been appearing the original work has gone through several editions—the fifth is just about to be published. The first volume of the English translation, which appeared in 1883, is now in many of its parts out of date and not fit to rank with the volume which we are now noticing as an exposition of the present condition of pathological knowledge.

Beyond this we have nothing but praise for the entire work, and we must cordially congratulate Dr. Macalister on the completion of his labours and our readers on the possession of a most valuable addition to English scientific literature.

Ambulance Lectures; to which is added a Nursing Lecture, in accordance with the Regulations of the St. John Ambulance Association for Male and Female Classes. By JOHN M. H. MARTIN, M.D., Honorary Surgeon, Blackburn and East Lancashire Infirmary, and Honorary Member of St. John Ambulance Association. London: J. & A. Churchill. 1886.

THIS little book of 120 pages is dedicated to the Princess Christian, as one who has "done so much to promote ambulance work in England." We confess to a preference for work which succeeds without patronage. A society that owes its initiation to the generosity of the Commonwealth of Analphi, and the liberality of the great Caliph Harun Alrashid, might more fittingly dedicate its works to the people, or at least to some recognised philanthropist. But dedications in this age mean little, and if the book contained any intrinsic merit the presence or absence of dedication would not count either way.

We do not desire to say anything unpleasant of a laudable attempt to give, in plain, untechnical language, useful information for dealing with surgical emergencies, but we would remind ambitious authors that nothing is more difficult than to condense surgical treatment into a few brief generalisations, and we think that any attempt to describe the anatomy and physiology of the human body in a few pages simply shows its impossibility. What useful purpose can the following paragraph, which describes (!) the skull, serve:—

"Observe—the skull appears the expansion of the spinal column; it may be considered as such. It contains the brain, and is wonderfully adapted for its protection. The teeth, which are the hardest structures in the body, are situated in the upper and lower jaw. Four of the organs of special sense are contained in the head—viz., those of sight, hearing, smell, and taste."

Or the valuable remark that—

"All people on getting out of bed in the morning are taller than when retiring to rest."

From such an author we might expect the remark that—

"The majority of people have five fingers on each hand and five toes on each foot."

The muscular, circulatory, and nerve systems are treated in a similarly brief and unsatisfactory manner, and cannot, we think, assist a learner.

The diagram on page 17 would not be out of place in a text-book of anatomy, but is simply indecent in a popular book "for male and female classes." The ten pages on bandaging are the best in the book, and we wish junior medical students were made more familiar with the many uses to which the triangular bandage may be applied.

The directions for controlling bleeding may, we think, be briefly stated by directing pressure to be made on the bleeding point. The elaborate description of the difference between venous and arterial bleeding is more likely to confuse than assist a non-professional in an emergency.

Directing how *crepitus* may be got, and how dislocation and fracture may be distinguished, has nothing to recommend it. We have known serious injury to result from this "looking for crepitus." If we should be so unfortunate as to fracture any bone of our leg, we hope there may be no certified ambulance amateur at hand to submit the injured leg to the testing process.

Treating of irritant poisons, the omission of fixed oils and raw eggs—remedies usually so easily obtainable—is an error that the next edition should correct.

The Conveyance of the Injured is the subject of Lecture V., but one day's practice would do more to teach men how to perform this duty than reading a quarto volume.

The last lecture is devoted to Nursing, and it is to be regretted that the author did not impress on our "trained" nurses the recognition of the fact that the first and principal duty of a nurse is to implicitly obey the physician, and to recognise fully that, though she may be capable of taking temperatures, she is unfitted to dogmatically decide on the proper medication and dietary of fevers. We all remember how much was hoped for from trained lady nurses, and as time rolls on we learn how the modicum of teaching has disappointed the desire of the profession.

Dr. Martin's is one of those pernicious little books that professes to teach everything and teaches nothing, and may cause the mis-

guided individuals that are possessed with the "fad" for amateur surgery to attempt work for which they are unsuited, to the serious injury of those they hoped to benefit.

Coca, Cocaine and its Salts. By WILLAM MARTINDALE, F.C.S. London: H. K. Lewis. 1886.

IN this small work Mr. Martindale has collected and put concisely together most of the available information respecting the now famous coca plant. Speaking of the tendency to develop fungi observed in aqueous solutions of hydrochlorate of cocaïn, Mr. Martindale has come to the conclusion that, by a careful selection of pure samples of the drug, a solution in distilled water, sterilised by boiling and afterwards preserved from dust, will keep well without the addition of an antiseptic. A good chromo-lithograph of the plant serves as frontispiece to the book, which is printed in blue ink on green paper for the benefit of tender-eyed patients.

The Diagnosis and Treatment of Syphilis. By TOM ROBINSON, M.D. London: J. & A. Churchill. 1886.

WE cannot say that this book satisfactorily fulfils the purpose of the author—to present students and practitioners with a "trustworthy, practical, and concise treatise on syphilis."

It is sketchy and incomplete, and adds nothing to our knowledge. In treatment Dr. Robinson is a staunch mercurialist, and enthusiastic on the virtues of iodide of potassium. He says:—"This drug (KI) will eat up all syphilitic products with marvellous precision" (p. 131), and sums up the treatment in this aphorism:—"Iodide of potassium to eat up syphilitic manifestations; mercury to prevent their recurrence" (p. 132).

Elements of Materia Medica and Pharmacy. By A. W. GERRARD. London: H. K. Lewis. 1886.

THIS clearly-printed and well-brought-out manual is, we presume, chiefly intended for the use of Mr. Gerrard's pupils, and for candidates for the Licence of the Pharmaceutical Society. The subject is treated under the heads of Materia Medica and Pharmacy, the former being subdivided into Inorganic and Organic Materia Medica. The information given is of the ordinary sort,

and there is nothing that calls for special remark. At page 83 is a funny statement which we can scarcely suppose not to be a printer's error:—**Emplastrum Ferri**—"This plaster is often called 'Roboran's plaster.'"

Guy's Hospital Reports. Vol. XLIII. 1886. London: J. & A. Churchill, New Burlington-street. Pp. 513.

The volume opens with an affectionate "*In Memoriam*" notice of Dr. Mahomed, late Assistant Physician to Guy's Hospital, who died of typhoid fever at the beginning of a career which promised to be one of brilliant success. His "Observations with the Sphygmograph," and the active part he took in the "Collective Investigation of Disease," attest the results he might have achieved but for his removal at the early age of thirty-five.

I. "On the Condition of the Bones of the Skull and the Dura Mater in Cases of Tumour of the Brain." This paper directs attention to the thinness and roughness of the inner surface of the calvaria in such cases; also to the question of what becomes of the atrophied bone; why the dura mater does not disappear, but, on the contrary, is often thickened; and to the peculiarity of the absence of pus formation. The paper is based on 18 cases of tumour of the brain with change in the wall of the skull.

II. "Two Cases of Strangulated Hernia in Infants." The advantages of combining *inversion* with *taxis* in cases of scrotal strangulation in infants are dwelt on.

III. "The Pathology of Extravasation of Urine, and of Sacculation of the Urethra and Bladder." The opinion that the mucous membrane of the urethra behind a stricture ulcerates and ruptures under pressure is sharply criticised.

IV. "Flexions of the Fingers—Dupuytren's, &c.—and some Senile Changes in Joints." Two careful dissections of well-marked examples of Dupuytren's contraction of the hand, and remarks on the changes produced by age in certain joints, especially the elbow, temporo-maxillary, and shoulder joints, not to be ascribed solely to rheumatoid arthritis.

V. "Abnormalities observed in the Dissecting-room of Guy's Hospital, 1883–84." Chiefly muscular, among which a five-headed biceps (figured); a left kidney (figured) with six different renal arteries arising separately from the aorta.

VI. "Uterine Dilatation." A paper to show that uterine dila-

tation, for the purpose of diagnosis or treatment, so far from being a dangerous proceeding, is, when conducted by proper methods, and under suitable conditions, harmless in almost all cases, and productive of the happiest results. Enumeration of the best methods of dilating the uterus, and cases illustrative of most of the methods enumerated.

VII. "Case of Pulsating Sarcoma, involving left Nasal Fossæ, Antrum, and Orbit." A man, aged sixty-six; frequent severe epistaxis. The pulsation largely diminished by pressing on the common carotid of the same side, also by pressing upon the left facial artery. The common carotid was eventually ligatured, and his life prolonged thereby for several months. When first seen the disease looked like a large lachrymal abscess, but digital examination revealed not fluctuation but strong pulsation. The sarcoma was of the spindle-celled variety.

VIII. "On the Changes in the Vascular System in Bright's Disease." This paper, based on *post-mortem* records, goes to confirm what was before shown by Dr. Galabin—that cardiac hypertrophy is not confined to cases of granular kidney, but occurs in a definite proportion of such as used to be called tubal nephritis, or large white kidney, but are perhaps better described as chronic parenchymatous nephritis. It also goes to show that lardaceous disease of the kidney, although accompanied by nephritis, is not associated with hypertrophic changes in the heart or arteries.

IX. "One hundred Cases of Cerebral Tumour, with reference to Cause, Operative Treatment, Mode of Death, and General Symptoms." Of the 100 cases the growth was tubercular in 45, a glioma in 24, a sarcoma in 10, a carcinoma in 5, a glio-sarcoma in 2, a cyst in 4, a gumma in 5, a lymphoma in 1, a myxoma in 1, and doubtful in 3. Of the 100 cases only 10 might have been operated upon.

X. "A Needlewoman's Bursa of Second Finger of the Left Hand."

XI. "On Middle Meningeal Hæmorrhage." This is by far the longest article in the volume, covering over 161 pages. This article has been arranged under the following heads:—Some points in the anatomy of the middle meningeal artery; those parts of the skull with which it is in contact; and the brain which is subjacent to this region. The condition of things which is liable to be met with in the parts which are concerned in middle meningeal hæmorrhage, viz.:—(1) The condition of the skull; (2) of the

brain, (3) of the middle meningeal artery; the site of the lesion in it; amount and condition of the clot, &c.; classification and grouping of cases of middle meningeal hæmorrhage, according to their hopefulness for trephining into (A) the most hopeful cases, (B) less hopeful, (C) hopeless cases. Finally, the *symptoms*, *diagnosis*, and *treatment*.

XII. "List of Specimens added to the Pathological Museum."

XIII. "Pathology of Changes produced by Pressure in the Bony Skeleton of the Trunk and Shoulder Girdle." Under the heading "Fractures of the First Rib or First Costal Cartilage alone," the writer refers to Professor Bennett's case, which is the only one he can find published. However, he considers this case was a dislocation of the joint.

The volume closes with a paper on "Cystic Tumours of the Breast," and particulars of 44 cases.

Royal University of Ireland. The Calendar for the Year 1887. Dublin: Alexander Thom & Co. 1887. 8vo. Pp. 308. *Examination Papers.* 8vo. Pp. 267.

The Secretaries have kindly presented us with a copy of the Royal University Calendar for 1887. Its appearance was delayed until the closing days of March, but when we have said this our hostile criticism of the book is well-nigh spent.

The portion of the Calendar which will interest medical students most is included in pages 132 to 144. Here are set forth the changes in the Medical Courses for 1887 and 1888, which the Senate, at its meetings in October, 1886, and January, 1887, ordered should come into operation in the autumn of the present year. In and after the year 1888, a Travelling Scholarship in the Faculty of Medicine, value £100, will be open to competition at the October Examination in that Faculty. The subjects will be in rotation:—(1.) Anatomy and Histology, and (2.) Physiology and Pathology. Only those students who have passed the final M.B. examination within one University year from the date of the examination will be eligible.

Appended to the Calendar, and occupying 267 pages of the volume, are the examination papers set in 1886. In the Examination for the Diploma in Sanitary Science we observe that three out of five papers are set by one Examiner—those, namely, on "Hygiene," "Vital Statistics," and "Sanitary Laws." This

appears to be decidedly a straining of the "Balance of Power," and is not calculated to raise the Diploma in public estimation, no matter how eminent the Examiner may be. In the present instance all the questions in "Sanitary Laws" have reference to Ireland and the Public Health Act for Ireland, and so are likely to mislead graduates of the University, whose lot in life may afterwards be cast in Great Britain or the Colonies. Also, three out of six questions on the "Vital Statistics" paper, have no reference whatever to this subject—for example, "What peculiar disease are wool-sorters liable to contract?"

Transactions of the Pathological Society of London. Vol. XXXVII. 1886.

This volume fully maintains the reputation of the thirty-six previous ones. The volume now extends to 617 pages, and is illustrated with 25 plates and 23 woodcuts. The section assigned to Diseases of the Nervous System is particularly instructive and valuable. The same remark may be made on that for Diseases, &c., of the Lower Animals. In this volume, we think for the first time, is a notice of the "Diseases of Vegetables." There is a communication on "Xyloma, or Woody Tumour on Branch of Pine."

Insomnia; and other Disorders of Sleep. By Henry M. Lynam, M.D. Chicago. 1885. Pp. 239.

The first chapter of this book is devoted to the Nature and Cause of Sleep, and is more or less of a physiological character, inasmuch as the author is Professor of Physiology and of Diseases of the Nervous System in Rush Medical College. The three next chapters are concerned with insomnia and its treatment. The rest of the book is devoted to dreams, somnambulism, and hypnotism. The author, we observe, is also Professor of Theory and Practice of Medicine in the Woman's College, Chicago, and we have no doubt his female pupils will find wonderful things in the work, but such has not been our good fortune.

PART III.

HALF-YEARLY REPORTS.

REPORT ON FORENSIC MEDICINE.

By H. C. Tweedy, M.D., Dubl.; M.K.Q.C.P.; Diplomate in State Medicine, Trin. Coll. Dubl.; Fellow and Examiner Royal College of Surgeons; Physician to Steevens' Hospital.

SUICIDE BY INJURIES OF THE HEAD.

Dr. Allen Staples (*Jour. Amer. Med. Assoc.*, Vol. VIII., No. 1) publishes an interesting study of Suicide by Injuries of the Head. He gives, among others, the following cases :—

The first case is one detailed by Dr. L. Langer.[a] A poacher, thirty-seven years old, attempted suicide by beating his head with a sharp angle of an axe. There were found on the forehead, between the frontal eminences and extending into the hair, three wounds filled with crushed and splintered bone. The middle one was about two inches long, and showed at its bottom a half-inch fissure in the bone. There was also a Y-shaped wound above and behind the right ear, extending to the bone, a similar one just above, and a large swelling just below the occipital protuberance. The man recovered in two months.

Fourmet[b] relates a noteworthy case :—A joiner had driven an iron chisel, $3\frac{1}{2}$ inches long and 3 lines broad, up to its head, by means of repeated blows from a hammer, into his cranium about the middle line. The patient became comatose, but, on the removal of the chisel in about seven hours, recovered within two weeks.

A remarkable case was published by Angenstein :[c]—J. M., convicted of repeated arson and sentenced to imprisonment for life, was reported to have simulated epilepsy and insanity, and to have made suicidal attempts by inflicting superficial wounds on his neck and arms. In October, 1859, he drove two nails, $1\frac{1}{2}$ inches long, into his frontal bone; these were with difficulty extracted by the

[a] Wiener med. Wochenschrift, 1878, No. 37, p. 999.

[b] Wiener med. Wochenschrift (R. Frank), 1885, No. 15, p. 454.

[c] Ibid.

forceps. In April, 1860, a similar attempt was made in the left parietal bone. He quickly recovered from the effects of each attempt. In September, 1860, he introduced under the skull a piece of wire. Signs of brain irritation followed this last wound, and a week later death ensued. The autopsy showed the dura firmly united to the skull at the place of the last injury, and the perforations through which the nails had been driven closed by membrane. There was purulent meningitis that had been caused by four needles that were found sticking into the meninges and brain. These needles had been introduced through the openings made by the nails.

A case presenting much analogy to the above is narrated by Dr. V. Biart.[a] It was that of a convict in the Kansas State Penitentiary, who attracted much attention among his fellow-convicts by boring a hole in his skull with an awl, and introducing therein pieces of wire. The physician-in-charge removed several pieces that had pierced both cerebral hemispheres. The wound of entrance was situated in the right parietal bone, near its posterior inferior angle. The patient stated at the time that he had passed other substances into his brain. Later he committed suicide by taking morphin; and at the autopsy his brain was found congested, and a wire three inches long and three-sixteenths of an inch thick was found running from the wound of entrance to the fissure of Sylvius. A flat nail one and three-fifths inches long was also found lying near the wire.

Carpenter[b] relates a similar case of an insane patient who sought in the following ways to take his life:—First, he bored through his skull just above the right ear, and passed a heavy wire four and three-quarters inches into the brain. Second, he thrust an awl into the vertex. Third, through the first opening he pushed another wire to the opposite side of the skull, causing a left-sided hemiplegia that lasted fourteen days. Finally, after some months, he poisoned himself with morphin. At the autopsy a piece of wire two inches long and a threaded needle were found lying near each other in the middle lobe of the right hemisphere, and in the frontal lobe were discovered a piece of wire two and one-half inches long, and a long headless nail.

Schauenstein[c] relates the case of a labourer who gave himself

[a] Agnew's Surgery, Vol. I., p. 294.
[b] Wiener med. Wochenschrift, No. 15, p. 457.
[c] Ibid.

seventeen blows on the forehead and vertex with a hatchet, some of which penetrated the skull. Death from meningitis followed.

E. von Hofmann:[a]—A woman first stabbed herself in the liver, and as death did not ensue seized a hatchet and struck herself so many blows on the forehead and vertex, that she fell back senseless. When she was brought into the hospital, consciousness had returned; linear cuts with contusions of the scalp were found. Much suppuration followed, and the patient died of pyæmia. The autopsy revealed that the outer table of the vertex had been penetrated by the cutting edge of the hatchet.

Maschka:[b]—A woman, sixty-three years old, stabbed herself in the abdomen with a knife, then beat herself heavily on the head with an axe, and finally attempted to open the veins in the elbow. She died in six days from meningitis. The *post-mortem* examination showed a large fracture on the right side of the frontal bone.

Riembault[c] reports the following case:—A man, fifty-three years old, among whose relations were sixteen insane, and who suffered from severe headaches, was found hung in a barn. He had first cut his scalp with a pocket knife, then dealt himself heavy blows on the head with a hatchet, and finally hung himself. There were found, at the autopsy, a large fracture at the juncture of the parietal and frontal bones, and nine parallel incised wounds of the scalp.

Kupfer[d] reports the case of a man, forty years of age, who was found drowned in the Spree. There was a history of overwork and anxiety, and a slight temporary mental aberration. There were found above and behind the right ear thirteen parallel wounds of the integument, some of which reached the bone. Over the left ear were many wounds with a large loss of substance, seventeen incisions being counted posteriorly, fourteen anteriorly. The bone was much splintered and fissured.

Krugelstein[e] records the following:—On the head of a woman found hung were thirty parallel wounds, one-half inch long. These were situated on the forehead and vertex and had penetrated the outer table. There were in addition some small parallel incisions in the cardiac region that, as they were suppurating, must have been three or four days old.

[a] Lehrbuch d. gericht. Med., p. 407.
[b] Wiener med. Wochenschrift, No. 15, p. 456.
[c] Ibid.
[d] Ibid.
[e] Ibid.

Von Haumeder[a] gives the case of an ostler, ill of typhoid fever, who was found hung. At the centre of the vertex was a sharp-walled hole two inches long and half an inch broad, at the bottom of which the bone was laid bare. Both hands were stained with blood. A short distance from the body lay a heavy hatchet, on which were traces of blood, and yet further off was found, near a pool of blood, a large hammer. An examination showed that there were at least sixteen blows directed against the head, seven of which penetrated the skull. The expert opinion on the case was that it was one of suicide; this opinion was founded on the facts that the wounds were of comparative insignificance from such heavy instruments, that they were parallel in their course, that they were all near each other, that there was no evidence of resistance, and that typhoid fever was present.

R. Frank's[b] case:—In the Vienna Allgemeines Krankenhaus, Surgical Section, a woman, sixty-four years old, presented herself on the forenoon of September 28, 1884. Her statement was, that her wounds were self-inflicted and made by a hatchet. In consequence of her injuries she died on October 4. Except some mental hebetude, she did not show any cerebral symptoms. But because of her mental dulness, her *ante-mortem* assertion that her injuries were produced by her own hand was not deemed trustworthy, and a judicial investigation was ordered. It was elicited that the woman lived in easy circumstances, but was somewhat peculiar and secretive in habit. Her family energetically scouted the idea of suicide, and the wounds were explained by a fall from a chair or table while she was dusting pictures.

An examination revealed the following injuries:—Hair in the anterior parietal and frontal regions abraded; a wound with ragged edges, four inches long, extending from between the eyebrows upwards and backwards, and forking above, was continued to the right an inch further. This large wound had a stellate appearance, and at its widest portion was two inches across. On the left side of it were two smaller wounds, and on its right side were two others, incised and parallel, that penetrated the skull. Their walls were inflamed and purulent. Numerous smaller wounds were found on the right forearm, elbow, knee, and on the left knee. The frontal bone showed a fissure two inches long, half

[a] Wiener med. Wochenschrift, 1882, No. 18.

[b] Wiener med. Wochenshrift, Nos. 15, 16, 17, "Selbstmord durch Hiebe gegen den Kopf," von R. Frank.

an inch wide. In addition, there were seven punctures that had more or less completely penetrated the skull. Besides the above-named lesions, on the inner surface of the calvaria were found blood clots with fragments of bone. The anterior portion of the right upper frontal convolution showed degeneration, and was dotted over with small hæmorrhages. The rest of the brain was anæmic and soft, the ventricles contained a turbid fluid; there were clots in the sinuses and purulent meningitis.

The expert opinion of Prof. Hofmann in the above case was as follows:—

1. J. N. died of purulent meningitis.

2. This was caused by violence through the above-named injuries, especially by that reaching from the base of the nose directly backwards, forking posteriorly and producing the fissure on the frontal bone.

3. This fissure, as well as the neighbouring elongated and sharply defined wounds of the scalp, coursing generally from before backwards, was caused by vigorous blows with a sharp and heavy instrument, probably with a hatchet, and the number of blows must have been nine or ten. The straight fissure of the frontal bone, and the incisions at the posterior end, from the fact that between the cleft walls large pieces of bone are wanting, and the walls of integument bounding the wounds can be recognised, must have been caused by two or more blows.

4. Since these numerous wounds were compacted together upon a comparatively small surface, and easily accessible to the hand of the patient, and were in the same direction from before backwards and almost parallel, and since some of them scarcely break the skin, therefore the suspicion is very strong that these injuries were produced, not by a foreign hand, but by that of the patient herself, for the purpose of suicide. This suspicion is confirmed by the circumstance that on the inner surface of both forearms, on the flexor surface of the left wrist, and under both knees are, huddled together, numerous parallel superficial wounds that doubtless arose from an attempt to open the veins, and were produced by the hand of the patient.

A suicide caused by blows directed against the head is a rare event, yet one sometimes observed; and experience teaches that this extraordinary mode of self-murder is chosen chiefly by the insane; it is therefore to be justifiably suspected that this patient, while she was insane, accomplished the deed.

Dr. Staples then goes on to say that in wounds of the head where the skull is perforated the mortality is always very high, no authority giving it as less than 80, and some giving it as 100 per cent. "If death follows in twenty-four or thirty-six hours, it will be from shock and the extravasation of blood and serum; when the fatal result is longer delayed, encephalitis or abscess will ultimately prove fatal. When the projectile remains within the cranium, the danger is greater than when it passes through or perforates, as in the former case there is one foreign body more in the cranium." [a]

A study of the above cases shows that death often does not result from the immediate effect of the injuries, more often the patient either gets well of them, or dies from the resulting inflammation, or tries some other method of suicide.

In a given case, the diagnosis between murder and suicide may be of great importance, and attention to the following points will be of use:—

1. The situation of the wounds must be one readily accessible to the hand. The majority of these injuries, as the cases given above attest, are situated on the frontal and parietal bones, more rarely on the temples, very rarely indeed upon the occipital bone.

2. Usually more than one wound, frequently many, are found. It is easily comprehensible that the first blows are made somewhat cautiously, and being comparatively unimportant do not render the suicide incapable of completing the act.

3. The injuries are, as a rule, huddled together in a comparatively small space, and take a parallel course. This is easily explained by the quick motion that has been taken by the hand. This disposition of the wounds, almost characteristic, is one of the most constant and weighty signs to which our attention can be directed.

4. Heavy strong instruments are regularly used. If they are blunt, fewer wounds are to be looked for, as unconsciousness would be the more quickly induced.

5. In many of these cases, other injuries made with suicidal intent, or traces of them, can be found in other portions of the body.

6. Signs of resistance or non-resistance should in every doubtful case be looked for. Regularity of the wounds, and a grouping together of them, are not compatible with resistance.

8. The history of the patient, as concerns the mental state, is always of importance. Most of these suicides had shown aberrations of intellect, perhaps of a transitory character, and hereditary

[a] Agnew's Surgery, Vol. I., p. 290.

taint came often into play. Delirium and cephalalgia were also the causes in one case each.

DEATHS BY POISON.

The *Pharmaceutical Journal* publishes a very useful article on the subject of "Deaths by Poison," suggested by the Registrar-General's report, giving the records of deaths ascribed to poison. The article illustrates the extent to which "death by poison," either accidental or by suicide, has been caused by poisons of those kinds which can be obtained from extra-pharmaceutical sources. The year 1885, to which the report now published applies, was remarkable for the small ratio of violent deaths as compared with any preceding years during which these reports have been issued. The total number of such deaths was 17,268, and of these 14,939 are classed as being due to accident or negligence, and 2,007 as suicidal. There has been a great reduction in the deaths from accident, and the total mortality from suicide, which had been gradually increasing in recent years, was lower than in any year since 1878. From the classification of the deaths by accident and suicide according to particular causes, it appears that out of the 14,939 under the general head of accident or negligence, 343 are recorded as due to poison; and out of the 2,007 under the head of suicide, 280 are recorded as being due to poison. The total number of deaths by poison during the year is, therefore, 623, or rather less than 3·7 per cent. of the total deaths by accident, negligence, and suicide. Of the deaths by suicide, 13·95 were caused by poison, but of the deaths by accident or negligence, only 2·29 are recorded as having been due to poison. So far as the public safety is concerned, in connection with the sale of poisons, it is therefore satisfactory to find that, as compared with other causes of death by accident or negligence, neither the actual number nor the relative proportion of deaths thus caused by poison is considerable. In the case of suicide, as might be expected, the proportion of deaths due to poison is larger; but even in this case it is in fact one of the causes to which the smallest number of deaths is due. Among the deaths by suicide from poisoning, the number of males was about 75 per cent. in excess of that of females, and in the cases of death by accident or negligence it was upwards of 80 per cent. in excess, though in this latter case the relation may be more accidental."

As regard the cases of death by poisoning from accident or

negligence, the narcotic preparations were the cause of the greatest number of deaths. "They comprise opium, laudanum, morphine, soothing syrup, cordial, paregoric, and chlorodyne, to which no less than 108 out of the total number of 343 deaths are ascribed. The class of substances which stands next in order comprises articles which are not for the most part poisons by Act of Parliament; such as the mineral acids—sulphuric, nitric, and hydrochloric acids—and carbolic acid, which have been the cause of death in 38 cases. The more deadly poisons, such as strychnine, prussic acid, aconite, belladonna, cyanide of potassium, nux vomica, &c., taken altogether, are accountable for a very much smaller number of deaths—16 in all. The remaining cases of poisoning under this head comprise 20 that are ascribed to alcohol, chloroform, and chloral; 24 that are referred to chemical products, such as caustic alkalies, phosphorus, bromide of potassium, and lucifer matches; 99 ascribed to arsenic, mercury, lead, copper, and zinc; and 33 to miscellaneous articles, some of which are not described."

Among the cases of death by suicide from poison the large number of 88, or 31·4 per cent. of the whole, is reported as having been caused by the mineral acids, carbolic acid, and oxalic acid. Next in order comes the class of narcotic poisons—opium, laudanum, morphin, chlorodyne, paregoric, soothing syrup, &c., to which 53 cases of death are attributed. Of the remaining 139 cases 49 are attributed to belladonna, prussic acid, oil of almonds, cyanide of potassium, and aconite, 2 to chloroform 20 to strychnin, nux vomica, and vermin killers, and 43 to kinds of poison that have not been stated. In addition to these cases of death by poison, three cases are recorded of murder of children under five years of age by poison, where narcotic preparations and a poisonous liniment were employed. These statistics will serve to show the direction in which legislation may be needful in regard to the sale of poisons.—*Brit. Med. Jour.*, Mar. 5, 1887.

THE POST-MORTEM DETECTION OF CHLOROFORM.

In the St. Louis *Medical Review* for Nov. 20, 1886 (quoted by *Med. Rec.*, Jan. 15, 1887), allusion is made to a trial for murder in that town, in which, at the *post-mortem* examination, undertaken twelve days after death, very decided reactions were obtained, by chemical examination of the viscera, of the presence of chloroform. The lungs, usually congested in case of death by chloroform, were selected as best suited for its detection.

The great volatility of chloroform would seem *à priori* to preclude the possibility of its detection so long after death, and as at the time there was considerable doubt expressed as to the reliability and accuracy of the experiments, therefore the doctor determined, once for all, to decide the matter by direct experiment, and so set at rest all doubts.

The subject is one of such far-reaching medico-legal interest, and so new, that we take from the *American Chemical Journal*, Vol. VIII., No. 5, portions of the paper as presented to the St. Louis Academy of Sciences:—

"The literature was first scanned carefully to ascertain whether there were any prior experiments in this direction, but nothing could be found. The direct object was then to determine how long after death chloroform can with certainty be detected; and also whether or no any substances are generated by the process of decomposition which might give similar reactions to chloroform, and thus lead to erroneous conclusions.

"The manner of experimenting was simple and direct. Dogs of from 15 to 20 lbs. weight were destroyed gradually by the administration of chloroform through the lungs in from five to ten minutes. Then the carcases were allowed to stand in summer's heat or the temperature of the room for different periods of time, and finally the lungs removed and tested for chloroform by the Ragsky method.—*Erdmann's Jour.*, 46,170. In the following the experiments are briefly given:—

"*Experiment I.*—Carcase exposed on a dissecting-table, during full summer's heat, for six days and ten hours. Decomposition far advanced, and an exceedingly offensive odour given off. The lungs were removed, and after having been finely minced and rendered slightly alkaline by means of sodium carbonate, were heated over a water bath in a flask through which a current of air was slowly passing. The escaping gases were sent through a Bohemian glass tube, which was heated to bright redness over a space of two inches. The iodised starch paper was five inches distant from this heated portion of the tube, and throughout the experiment remained perfectly cool. A very strong blue reaction was observed, and the nitrate of silver solution was strongly precipitated.

"*Experiment II.*—Carcase exposed during full summer's heat for ten days. It had then lost all solidity, the hair literally falling off by the slightest abrasion. The lungs were removed and

examined as in Experiment I. A very decided reaction for chloroform was obtained.

"*Experiment III.*—Carcase exposed during full summer's heat for fourteen days. The lungs then removed and examined as in Experiment I. The reaction for chloroform was very decided.

"*Experiment IV.*—Carcase placed in an ice-chest for three weeks, and then exposed for ten days during full summer's heat. The lungs were then examined as in Experiment I., and a strong reaction for chloroform obtained. I do not hesitate to say that in winter chloroform could be detected without the slightest difficulty for many months after death.

"*Experiment V.*—Carcase exposed in a room (70° F., very constant) for three weeks and three days. The lungs were then examined as in Experiment I., and a very decided reaction for chloroform obtained.

"*Experiment VI.*—Carcase exposed in a room (70° F., very constant) for four weeks. The lungs examined as in Experiment I., and a decided reaction for chloroform obtained.

"The question now arises whether there cannot be substances formed by the process of decomposition which, resembling chloroform in certain chemical reactions, might therefore lead to erroneous conclusions. Dr. Ragsky already partially answered this question experimentally. The author made three experiments to this end, which are herewith briefly given :—

"*Experiment I.*—The lungs of a slaughtered bull exposed during full summer's heat for ten days. Not a trace of reaction of chloroform could be obtained by the Ragsky method.

"*Experiment II.*—The lungs of a slaughtered bull exposed during full summer's heat for fourteen days. Not a trace of reaction of chloroform could be obtained by the Ragsky method.

"*Experiment III.*—Carcase of a dog destroyed by coal gas was exposed in a room (70° F., very constant) for three weeks and four days. No chloroform reaction could be obtained by the Ragsky method.

"*Conclusions.*—1. By the process of decomposition no substances are generated which could vitiate the tests for chloroform by the Ragsky method. 2. Chloroform, when it has caused death by inhalation, can with certainty be detected in the body four weeks after death, and, notwithstanding its volatility, it is certainly retained in the viscera in large amount during this time. In the case which was the cause of these experiments being undertaken,

the victim had been dead at least ten days before the body was discovered in a high state of decomposition. On the strength of the Ragsky and Hofmann tests, the author gave it as his sworn opinion that the deceased had chloroform in his viscera, whereupon a charge of murder by chloroform was preferred. Maxwell, the culprit, finally, after the lapse of an entire year, made confession that chloroform had indeed been the cause of death. It being certain, finally, that chloroform can be detected a long time after death, as evidenced by our experiments, we must next try to understand why this should be so. The following may serve to this end:—

"R. Dubois (*Chem. News*, 1886, 311) finds that the vapour of chloroform penetrates into the interior of the tissues, and becomes substituted for normal water. This is not a phenomenon of desiccation or osmose; a true affinity comes into play, the protoplasm absorbing the vapour of the anæsthetic and expelling a certain quantity of water.

"Chancel and Parmentier (C. R. 100, 27) have proved that chloroform has a very decided affinity for water. The author allowed to stand open a flask containing water, holding a small quantity of chloroform in solution. After two weeks' time the chloroform reactions could still be obtained without difficulty. Add to the above that chloroform is a powerful preservative agent (Robin and Augendrie, C. R. 30, 52; 31, 679), we have a collection of factors sufficient to enable us to understand the lengthy occlusion of chloroform in the animal body, though others of minor importance might be adduced besides these.

"Grehant and Quinquaud (C. R. 97, 753), experimenting on dogs, find the amount of chloroform necessary to produce anæsthesia to be at least one gramme to every two litres of blood. On the basis of these results, the total quantity of chloroform in the blood of a man of 150 pounds weight would be $2\frac{3}{4}$ grammes approximately, when rendered insensible through its inhalation. The amount necessary to produce death would, under normal conditions, certainly not be less than this. Under the assumption that one-sixth of the entire quantity of blood circulating in the body is at all times passing through the lungs, the quantity of chloroform in the lungs of a man of 150 pounds weight rendered insensible from its inhalation would be about one-half a gramme. We desire to emphasise by this calculation that there is an abundance of material in the lungs for the detection of chloroform. The liver would undoubtedly also be very suitable for its detection."

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

SURGICAL SECTION.

President—Sir William Stokes, President of the Royal College of Surgeons, Ireland.
Sectional Secretary—Mr. W. Thornley Stoker.

Friday, January 21, 1887.

The President in the Chair.

Trephining for Mastoid Disease with Paralysis and Aphasia.

Mr. Fitzgibbon read a paper on a case of trephining for mastoid disease with paralysis and aphasia:—Miss A. E., aged twenty-seven, was attacked by an ear-ache on the left side, in May, which continued for several weeks, when facial paralysis set in on the affected side. This symptom disappeared, shortly after which facial paralysis appeared on the right side, with confusion of ideas and aphasia, and threatened loss of power of lower limbs, indicating intracranial mischief. He trephined the left mastoid cells, removing a portion of upper surface of petrous portion of temporal bone. After some days matter escaped from the opening in the bone, and the patient finally recovered perfectly both her physical and her mental health.

The President said the case illustrated the importance of bone-drainage, the subject of which was discussed last year. He asked whether the suppuration was from an abscess or from the track of the wound made by the trephine; and, secondly, whether the paralytic symptoms resulted from local inflammation of the bone itself, or, possibly of the periosteum.

Mr. Wheeler said that the night he himself saw the subject of this communication she was suffering from want of power in the lower limbs; she misapplied words, and had facial paralysis on the right side. Her history was that an attack of scarlatina, some years before, was followed by discharge from her left ear. Having examined her ear by artificial light he perceived an aperture in the upper part of the tympanic membrane, and he was informed that a short time before there had been a discharge from the ear, which suddenly ceased. The temperature was high and the pulse rapid; the pupils responded equally, but he had no opportunity of making an ophthalmoscopic examination. He came to the conclusion that she was suffering from phlebitis, perhaps a slight meningitis, and not improbably from an abscess in the temporo-sphenoidal lobe. His reason for thinking that an abscess might be present was that the train of symptoms and her history almost exactly corresponded to those of a patient of his own on whom he operated, and successfully evacuated an abscess situated in the temporo-sphenoidal lobe, as reported to the Academy of Medicine some four years ago. Two symptoms very characteristic of intracranial abscess were absent—viz., abnormally slow pulse and abnormally low temperature. But the existing phlebitis and meningitis would account for this. The want of power in her lower limbs was due to irritation of the medulla oblongata, perhaps a local phlebitis of the vessels of the medulla, as the acoustic vein joins the veins on the anterior surface of the medulla oblongata. The facial paralysis on the right side was probably caused by the irritation of the centre of the seventh nerve, carried from the left side, as the centres of both nerves lie close together. The defect in speech was likely due to the fibres of the left restiform body running upwards. At the consultation he strongly advised operation. Although Mr. Fitzgibbon stated he placed the trephine a little higher up than the point designated in the operation he (Mr. Wheeler) performed, on examination of the bone removed it would be seen that the mastoid cells had been opened, which would not have been the case had the trephine been placed higher up. Some persons thought that there was danger of opening the lateral sinus, but if the rule was adopted as laid down by him (Mr. Wheeler) there could be no danger of it—namely, first to bisect the mastoid process, all anterior or in front of this line keeping the operator well clear of the lateral sinus, and then to place the lower border of the trephine on a level with the external auditory meatus; the tympanum and mastoid cells would be opened, giving free exit for discharge; the dura mater would be exposed, and should pus exist between it and the cranium there would be freedom for its escape. Further, should an abscess exist in the temporo-sphenoidal lobe of the brain it might be conveniently tapped through the exposed dura mater or through the tegmen tympani, should it not have burst through this slender portion of bone. Sections of the

skull and brain which he exhibited demonstrated, he said, on the right side the operation which he performed; and on the left side, having first performed the operation, he removed the cerebellum to show that there was no danger of wounding the lateral sinus. He also perforated the dura mater exposed in the operation, and penetrated through it the temporo-sphenoidal lobe of the brain with a probe lying *in situ*. Hence, to tap an abscess in the sphenoidal lobe was the direct and correct course to adopt. The perforation in the tympanum was insufficient to evacuate the discharge in cases suitable for trephining.

Mr. Story failed to see what object was gained by trephining the mastoid at all, since pus was found nowhere. Of course, if the surgeon made up his mind that he had to take something out by trephining, let him do the operation, but he ought not to make a hole in the temporal bone to seek for pus and find none. The favourable termination of the case appeared to be a *post hoc* instead of a *propter hoc*, as regarded the *hoc*. Another point was that he did not see why the left ear was trephined instead of the right, as the lady had a running from both ears after scarlatina, and had paralysis of the facial nerve on the left side. The case was not to be regarded as one of those which would have died if left alone.

Mr. Pratt said he had seen eight cases of the kind. Of these four were operated on and recovered, while, of the others, two that were not operated on died, and he lost sight of the third. Moreover, pus welled into the wound when made by the trephine only in one case, but the pus that came afterwards appeared to come from inside the skull rather than from the wound itself. Hence the advisability of the operation. He asked how Mr. Fitzgibbon stopped the hæmorrhage?

Mr. Cox mentioned the case of a female whom he treated medicinally for similar symptoms, and she became restored to health. He asked how Mr. Fitzgibbon accounted for the paralysis, especially of the lower extremities, and whether he attributed the unsteadiness of gait to cerebral causes?

Mr. Thomson inquired at what period after the operation was performed did recovery result? because after the removal of the bone there were several days during which there was no discharge, and as the history of the case went on there did not seem to have been any great improvement for several weeks. If the opening had given an exit to any collection of pus, once the pus escaped there ought to have been some definite improvement. But the case seemed to have covered a very long period, with fluctuations.

Mr. John H. Scott asked whether the purulent discharge had a strong fœtor?

Mr. Bennett said the tendency of Mr. Wheeler's remarks was to recommend trephining as a remedy for all cases of otorrhœa.

Mr. Wheeler said that he had distinctly defined the suitable cases, and indicated that there were many cases unsuitable.

Mr. Bennett enumerated several lesions not relievable by the trephine, including pyæmia and the direct perforation of the lateral sinus by caries, and his opinion was that the only cases likely to be relieved were those in which the operation was done early for accumulation of pus in the mastoid cells, or where, with a bold stroke, an abscess of the brain was reached.

Mr. Fitzgibbon, in reply, said it was with the view of acquiring information himself on some of the questions discussed that he had brought the case forward. He attributed the paralysis to inflammation extending, in the first instance, to the facial nerve upon the left side, and the paralysis on the opposite side was the result of reflex irritation extending to the opposite side of the brain. The loss of power in the lower extremities was due to inflammation extending to the medulla oblongata, arising from the pus between the dura mater and the bone on the left side of the cranium. The granulations which he had described, but which Mr. Wheeler had not observed, might have been blebs of purulent matter which looked like granulations. At all events, they would not wipe off with wadding. He had placed the trephine above the mastoid process, trephining the petrous portion of the temporal bone, but involving the upper margin of the mastoid process; and the demonstration given by Mr. Wheeler justified the precaution he took in that respect, because a great deal more than half the disc of the trephine was involved in the petrous portion of the temporal bone, and the separation of that large mass would require a greater amount of force than might be required to give free exit to pus, and might extend so as to lacerate the lateral sinus. Mr. Story's question as to what was gained by the operation, since no pus was got, had been answered sufficiently by Mr. Pratt. Believing suppuration had taken place before inflammation between the bone and the dura mater, which became extravasated on the occasion of a long carriage drive, thereby relieving the pressure, he had trephined in the position where the pus was most likely to present itself. That condition explained the paralysis on the left side, and paralysis supervening on the other side was from the extension of the inflammation to the nerve on the opposite side from the common origin. It was, however, clear that the surgeon should not let the patient die for want of making an effort to save life; and in the case under discussion Dr. Mayne had expressed the opinion that the girl must die, while believing that the operation could do no good. Hence the operation was justifiable, even though the indications were extremely ambiguous and questionable. The hæmorrhage was stopped with a piece of lint by putting his finger on it. Relief was given when he gave the pus free exit. The inflammatory condition had been going on, extending to

the base of the brain, to the meninges and the medulla oblongata, and was subacute at the time of the operation; but the pain was relieved immediately the matter commenced to discharge through the trephine opening, and she never complained of the agonising pain in her head which she had done for a considerable number of days following the operation. The symptoms were generally relieved immediately after the operation, with the exception of great prostration and delusions, which took possession of her even when her physical condition was that of convalescence. There was an unpleasant fœtor from the discharge; it was more offensive than laudable pus would be. As to Mr. Bennett's objection to trephining in all such cases, he had himself the case of a woman named Margaret Robinson in which Mr. Wheeler would have trephined, but the milder operation of incision answered the purpose quite as well. It was a well-known fact that the incision of inflamed bones often led to the recovery of a bone which otherwise would go on into destructive caries.

The Section adjourned to the 18th of February.

OBSTETRICAL SECTION.

President—A. V. Macan, M.B., M.A.O., Dubl.; F.K.Q.C.P.
Sectional Secretary—Andrew J. Horne, F.K.Q.C.P.

Friday, February 4, 1887.

Dr. Atthill in the Chair.

Fibroid Tumour.

Dr. M'Mordie, of Belfast, exhibited a fibroid tumour which had been removed from a single woman, aged twenty-five years, in consequence of excessive hæmorrhage.

Ovarian Tumour.

Dr. Lane exhibited an ovarian tumour. Dr. Macan assisted him in the operation, and, from taking part in it, they both became affected with boils and abscesses on their hands, while Dr. Macan got them on his arms and chest. A considerable quantity of the fluid got into the patient's peritoneal cavity. She made a good recovery.

Ovariotomy.

Dr. W. K. M'Mordie described a case of double ovariotomy performed by him at the Samaritan Hospital for Women, Belfast, on August 7th, 1886. For the pedicle of each cyst he used strong silk with the Staffordshire knot described by Mr. Tait. For the incision he used silver wire

sutures, and between the first and second sutures from the lower angle he left in a Keith's glass drainage tube, which was removed on the fourth day. Antiseptic dressings were used, and the sutures were removed on the tenth day. The woman made an excellent recovery, and returned home on September 6th, one month after the operation. He also described a case in which he removed both ovaries where confirmed masturbation resulted in insanity. The woman practised the habit regardless of the presence of others, even in the presence of her husband and children. The operation completely cured her of the pernicious habit, but up to the present her mental condition was not much relieved. In the left ovary was a small cyst about the size of a hazel nut filled with a thin dark-coloured fluid.

Dr. MacSwiney said it was of great importance to ascertain whether the masturbation was the cause of the insanity, or whether the insanity developed from an inherited tendency, and was the cause of the masturbation.

Dr. Thornley Stoker said that, while admitting that under certain circumstances the removal of the ovaries was a justifiable operation, he altogether refused to endorse such a treatment for masturbation and the relief of a mental condition without some other treatment having been previously attempted. He did not think Dr. M'Mordie had said enough to justify his removal of the ovaries in the case in question. Another operation for cases of masturbation which had got into disrepute was that of clitoridectomy. He would certainly prefer it to that which involved the destruction of the woman's sex, particularly in a case where the patient was only thirty-three years of age. About a year and eight months ago a young lady, aged nineteen years, was brought to Swift's Hospital, who was as mad as could be, and who was a persistent victim to the habit. She lost flesh, and had all the symptoms of hopeless insanity. After everything had been tried with her in vain he removed her clitoris, and she never made any attempt to masturbate afterwards. She went back to her work as a governess, and was now perfectly sane and earning her living respectably. There was no reason to suppose that clitoridectomy would not have proved efficacious in Dr. M'Mordie's case. He was convinced that castration of the male subject ought frequently to be done with lunatics. It corresponded with ovariotomy in the female, and was quite as justifiable.

Dr. More Madden said it was a serious thing to perform either of the operations in question until a fair and full and thorough trial had been given to moral rather than physical treatment. He believed that more could be done by acting on the moral nature of the woman, sedative treatment, change of air, and occupation.

Dr. Moloney said that, according to his experience, if the woman had an insane history, and if the attack were a second one, if she had

been left alone she would have recovered. As to moral influences, they were of little use in the presence of a delusional lunatic.

Dr. Byrne said he quite agreed that as the whole genital tract was involved in masturbation, there was not much use in removing a small organ like the clitoris, unless the affection was distinctly traceable to it.

Mr. Thomson said, with regard to the subject of the second paper, he did not know very much about insanity; but it seemed to him that masturbation was very often a simple coincidence with it—certainly so in a number of cases—and that an actual relation in the way of cause and effect between insanity and masturbation had not been made out, or was very uncertain. Mr. Moloney's statistics pointed to that conclusion, for the records of the English asylums showed only one and a half per cent. of cases of lunacy traceable to masturbation. That being so, it was a very serious matter to excise healthy ovaries on the supposition that it would cure the habit; and Mr. Lawson Tait alleged that the removal of the ovaries did not destroy the sexual instinct. He had even gone further than that, and stated that in certain cases the effect of the operation had been to increase the sexual appetite. If so, what was to be gained in cases of masturbation and insanity by removing the ovaries? He maintained that other means, including restraint, should be first tried.

Dr. Smyly said the disease resulting from this habit was a nervous one, and Hegar, whose work on the diagnosis of nervous complaints was most exhaustive, had confessed his inability to come to a certain diagnosis as to the cause. In the majority of cases of the kind in question the ovaries were not normal.

Professor Dill approved of Dr. M'Mordie's proceeding.

The Chairman said Dr. M'Mordie's paper was a most valuable contribution, and he considered that in many cases the removal of the ovaries was not only a justifiable but most valuable operation. Nevertheless, he thought the number of cases in which the operation was performed elsewhere was greatly in excess of what was absolutely necessary. Mr. Tait's statement proved too much, and he did not think it was correct. He did not think that the removal of ovaries had any great influence on sexual desire at all. He certainly did not believe that it ever increased it. His (Dr. Atthill's) impression was that the masturbation was the result, and not the cause, of insanity, so that the value of the operation in those cases was not established.

Dr. M'Mordie said—I could not expect that the somewhat new method I have adopted of treating an aggravated case of masturbation with insanity would meet with unanimous approval. Dr. Thornley Stoker thinks that removal of the clitoris would be more likely to cure masturbation than removal of the ovaries. If the masturbator practised the habit by irritating the clitoris, the removal of that body would certainly put a stop

to that particular mode of performing the operation. But it would have no effect if the individual had been in the habit of operating on her person by using a blunt instrument in the vagina, even to the extent of gently drumming against the cervix uteri. References have been made to a certain prominent gynæcologist, who states that removal of the ovaries has often no effect on the sexual inclinations of the female. If Mr. Tait, in the cases he has given, would find out in each case what length of time it required to produce this sexual "orgasm," he would have gone a certain way to prove something. I quite agree with what Dr. Atthill has said. I am not an advocate for the wholesale removal of slightly diseased ovaries. I see but few cases where I think it justifiable. I believe in the case I have related to-night the cure of the terrible habit alone justified the operation, and I am much gratified to have the approval of my venerated father in the profession—Professor Dill.

SUB-SECTION OF ANATOMY AND PHYSIOLOGY.

Chairman—J. A. Scott, F.R.C.S.I.

Sub-Sectional Secretary—H. St. John Brooks, M.B.

Opening Meeting, Thursday, February 10, 1887.

Mr. J. A. Scott in the Chair.

The Marsupial Heart.

Dr. Cunningham exhibited the heart of a kangaroo which he had recently successfully injected. He stated that Owen was of opinion that the marsupial heart was distinguished by—(1) the absence of the fossa ovalis; (2) the presence of a cleft in the auricular appendix of the right side, and (3) the absence of a separate orifice in the right auricle for the coronary vein. The absence of the fossa ovalis was also associated with a total absence of the ductus arteriosus, the Eustachian valve, and other vestigial remains of embryonic life, such as the urachus, hypogastric arteries, round ligament of the liver, &c., and was accounted for by the short period which the embryo spent within the uterus. The bifurcation of the auricular appendix was well seen in the specimen exhibited, and it was present in a marked form in the phalangers, but was absent in the thylacine and dasyure. With regard to the third point of distinction mentioned by Owen, Dr. Cunningham stated that he had been able to make out in the Challanger marsupials a separate opening of the great cardiac vein in the right auricle, but this was situated at the upper part of the cavity close to the opening of the superior vena cava.

Dr. Frazer asked if Dr. Cunningham had seen the heart in any of those marsupials before their introduction into the pouch?

Dr. Cunningham.—I have had only one example of a fœtus in my possession, and this was taken from the pouch of a phalanger.

Dr. Frazer said he had a drawing of one with an umbilical cord attached.

Absence of the Internal Iliac Artery.

Mr. Ledwich read the following notes of the dissection of a male subject, in which the internal iliac artery was absent on the left side. On the right side the structures were normal:—

The abdominal aorta bifurcated at the lower border of the third lumbar vertebra, to form the two common iliac arteries; the right divided normally into the internal and external iliacs, but the left, instead of dividing, continued as a single vessel in its whole course to the femoral artery. This single iliac artery passed obliquely downwards and outwards over the psoas muscle for a distance of three inches, and then turning somewhat sharply inwards and then downwards over the ilio-pectineal line, entered the pelvic cavity. This intra-pelvic portion of the vessel formed a long loop reaching to a point about half an inch below the highest part of the great sciatic notch. The artery then ascending, re-crossed the ilio-pectineal line, and turning downwards over the horizontal ramus of the pubis, terminated in the femoral artery. This vessel may therefore be considered as divided into three portions:—1st. The oblique portion. 2nd. The looped portion, which may be subdivided into—(*a*) the descending limb; (*b*) the transverse part; (*c*) the ascending limb. 3rd. The horizontal or pubic portion. The diameter of the vessel was greatest at the transverse part of its loop, where it measured $\frac{7}{16}$ of an inch, and least at the termination of its pubic portion, where it was $\frac{5}{16}$. Its total length was nine inches. The first sacral nerve passed through the loop of the artery from without inwards, and tightly held down the vessel; the nerve, then winding round the inner side of the ascending limb of the loop, joined with the lumbo-sacral cord. The branches which arose from each portion of the artery were as follows:—From the oblique portion—(1) A posterior ilio-lumbar artery of some size, which resembled in its course and mode of termination the lumbar branch of a normal ilio-lumbar artery. (2) Two or three small branches to the psoas muscle, peritoneum, &c. From the descending limb of loop—(1) The internal pudic artery arose opposite the first sacral foramen. Its intra-pelvic portion was exceedingly long, measuring from its origin to the great sciatic notch fully five inches, and in diameter it measured a shade over $\frac{1}{8}$th of an inch. From its origin the pudic artery curved inwards and downwards to the middle of the anterior surface of the bodies of the third and fourth bones of the sacrum, where it gave off the middle sacral artery. It then curved outwards and downwards, between the second and third sacral nerves, and in front of the pyriformis

muscle, to the great sciatic notch through which it passed below the muscle and followed thenceforth the route and termination of a normal pudic vessel. The middle sacral artery was very small, and arose from the internal pudic over the fourth bone of the sacrum. It passed downwards in the middle line for a distance of one and a half inches, and terminated normally on the coccyx. The internal pudic also gave off, just outside the sciatic notch, a large muscular branch to the gluteal muscles. From the transverse part of loop—(1) The lateral sacral artery arose just above the second sacral foramen. It was a short, small vessel, and sent branches into the second and third sacral foramina. (2) The gluteal artery was a short, thick trunk, which arose from the junction of the transverse and ascending portion of the loop. It passed almost directly outwards through the great sciatic notch above the pyriformis muscle, and terminated in the usual manner. From the ascending limb of loop—(1) The sciatic artery arose three-quarters of an inch above the transverse portion, and passing downwards internal to the first sacral and the lumbo-sacral nerves, left the pelvis through the great sciatic notch below the pyriformis muscle, and terminated in the usual way. (2) An anterior ilio-lumbar artery (much smaller than the posterior), which terminated like the iliac branch of a normal ilio-lumbar artery. No other branches could be discovered arising from this abnormal iliac artery. The obturator and deep epigastric arteries arose by a common trunk from the femoral, about one inch below Poupart's ligament.

Dr. Cunningham—This is a very rare condition of the arteries indeed. If Mr. Ledwich has the drawing it would be well that it should be reproduced. Not only is the anomaly interesting from an anatomical aspect, but it has many practical points of interest as well. I have never seen the condition myself, and I know it to be a very rare form indeed.

Dr. Brooks—In several years' hard work in which I have kept a record of anomalies of this nature, I have never seen this condition. It is mentioned in the supplement to Krause's Lehrbuch and also in the chapter on arterial anomalies in Henle, as a very rare abnormality.

Dr. Frazer asked if there were any prominent nerve aberrations.

Mr. Ledwich—The only thing was the nerve passing through the loop; everything was normal except the artery.

Dr. T. E. Little asked (*a*) if the condition of things on the other side was normal; (*b*) whether any observation had been made on the arrangement of the veins with respect to the arteries; (*c*) if the condition of the obliterated hypogastric artery had been observed?

Mr. Ledwich replied that the arteries were altogether normal on the right side. The veins, however, and the hypogastric artery had been entirely removed by the dissectors of the part before it came under his observation.

Variations in the Nerve-supply of the Lumbrical Muscles.

Dr. Brooks communicated the result of his investigations into the varieties in the innervation of the lumbricals of the hand and foot, with some observations on the perforating flexors.

In this paper the author discussed the subject of variations in nerve-supply of the lumbrical muscles under the following heads:—(1) Discrepancies in the statements of English and Continental anatomists. Quain, Ellis, and Gray, are all agreed that in the hand the two outer lumbricales are supplied by the median, and the two inner by the deep branch of the ulnar nerve; and that in the foot the two inner lumbrical muscles receive their nerves from the internal plantar, and the two outer from the deep branch of the external plantar. Continental anatomists (Henle, Schwalbe), however, describe varieties, and differ widely from English anatomists, in stating that the two outer lumbricales of the foot are supplied on their superficial surface. (2) Variations of innervation that he had observed in man, with an account of the nerve-supply in the Orang, Gibbon, and Macaque, as shown in the following table:—*Variation in Nerve-Supply of Lumbrical Muscles in Man—Hand Lumbricals.*—First and second by median, third and fourth by deep ulnar, 9 cases; first and second by median, third by median and deep ulnar, fourth by deep ulnar only, 7 cases; first by median, second and third by deep ulnar, fourth by deep ulnar only, 1 case; first, second, and third by median, fourth by deep ulnar, 1 case; first, second, and third by median (deep dissection not carried out), 2 cases; total, 20 cases. *Foot Lumbricals.*—First by internal plantar; second, third, and fourth by deep external plantar, 8 cases. *Innervation of Lumbricales in Apes.*—Foot of Orang—First lumbrical by internal plantar, second and third by deep external plantar (fourth not noted). Foot of Gibbon—First by internal plantar, second and third by deep external plantar, fourth by superficial division of external plantar. Hand of Gibbon—First and second by median, third and fourth by deep ulnar. Foot of Macaque Monkey—First by internal plantar; second, third, and fourth by deep external plantar. Hand of Macaque—First and second by median, third by median and deep ulnar, fourth by deep ulnar only. (3) The arrangement of the nerves to the lumbricales, as described by Professor D. J. Cunningham in certain marsupials and in the fox-bat. In the hand of Thylacinus and Cuscus the lumbricals are all supplied by the median, and in the foot of the latter marsupial the three inner (tibial) lumbricales are supplied by the internal plantar nerve. In the foot of the fox-bat the three inner lumbricales are supplied by the internal plantar, and the fourth by the superficial division of the external plantar. (4) It appears probable from these facts that the lumbrical muscles were originally all supplied on their superficial surface; and that the deep nerve (ulnar in the hand, external plantar in the foot) is

gradually displacing the superficial (median, internal plantar). This invasion of the deep nerve has advanced further with respect to the lumbricales in the human foot than it has in the hand. (5) The nerve-supply of each of the four bellies of the flexor profundus digitorum was investigated in five arms belonging to five different human subjects. In the following table, "first" signifies the belly belonging to the index finger, "second" the portion of the muscle which ends in the tendon for the middle finger, &c.:—First belly by median, second and third by median and ulnar, fourth by ulnar only, 4 cases; first belly by median; second, third, and fourth by ulnar and median, 1 case. It appears, therefore, that there is a general correspondence between the innervation of a particular lumbrical muscle and that belly of the long perforating flexor of which it is a part; this fact is best made out in the case of the first or indicial lumbrical of the hand and the indicial belly of the flexor perforans, which are both supplied by the median only; it is also seen in the fourth lumbrical and the belly of the long flexor ending in the tendon to the little finger (both by ulnar); also in the third lumbrical and annular belly (both of which have typically a double nerve-supply). In the foot and leg this part of the investigation presented special difficulties, which have, however, been overcome (in a measure) by minute dissections of the nerves, conducted under water.

The Chairman.—It is of more importance to correct the existing text-books than to discover something new, as to learn something wrong is worse than nothing. It would be interesting to get a nerve in good condition where the junction occurs in order to obtain a series of transverse or longitudinal sections, and so find where the fibres go to.

Dr. Cunningham.—All through Dr. Brooks' investigations I have observed his work in process and watched the results. Having travelled very often over the same ground myself in the lower animals, I very early came to the understanding that nerve variations, both in the hand and foot, were to be found. Upon the strength of this, some years ago, I attacked the dogma, up to that time universally held, that when you knew the nerve which supplied a muscle, then you knew the muscle. I was also led to form the idea which Dr. Brooks shares with me that one nerve of the hand and foot seems to be getting the upper hand of the other; that there is a struggle between the ulnar and median nerve of the hand, and between the internal and external plantar nerves of the foot. It seems to me that in the mammalia the ulnar and external plantar nerves are usurping the sway and driving the median and internal plantar out of the field altogether. It is when you come on the confines of distribution that you find the variations. In the border line of hand and foot, between the two nerves, you find a swaying, sometimes in one direction and sometimes in another. Dr. Brooks' paper will be a feature in the Transactions of the Session.

Dr. Brooks, in reply, said he intended to act upon Mr. Scott's suggestion as to making sections to follow up the divisions of a nerve. Dr. Purser had made a similar suggestion, that it would be a good method of investigation in histology to make sections in order to ascertain the precise way in which a nerve divided.

Exhibitions.

Dr. Cunningham exhibited (1) four Chinese plates of human anatomy which had been presented to him by Dr. Irwin, of Tientsin; and (2) casts of deformed feet of Chinese women which had been presented to him by Professor Welcker, of Halle. He explained from the cast that the foot was bent into an exaggerated arch, so that the os calcis was brought to lie immediately below the astragalus; but though they distorted the foot, the Chinese seemed to have an appreciation of the importance of the great toe, which was preserved for locomotion.

Dr. Frazer said he had a book with a series of plates, published 200 years ago, illustrating the Chinese system of anatomy which had been followed for upwards of one thousand years.

Mr. Thomson.—They have advanced in surgery of late years. They have had "Erichsen's Surgery" translated into Chinese.

Dr. Frazer.—And also a Dublin book—"Churchill's Midwifery."

The Sub-Section adjourned to 5th of May.

POISONING BY IODIDE OF POTASSIUM.

The following case is reported by Wolf (*Berl. kl. Woch.*, 1886):—A woman, aged forty-eight, suffering from subacute nephritis, took in two days about 40 grains of iodide of potassium. Coryza and a pustule on the nose were observed on the second day. The administration of the drug was stopped, but next day the face, lips, and eyelids were much swollen, and a purulent discharge exuded from between the lids. On the face, head and neck, and to a less extent on the body, a rash, consisting of papules, pustules, bullæ, and a few acne spots, appeared. The bullæ predominated, were of large size, and contained yellowish-red or pustule-like fluid. The visible mucous membranes were likewise affected, and there was aphonia. No iodine could be found in the excretion. The iodide of potassium used was found to be pure. On the fourth day ulceration of the skin appeared; there was bloody diarrhœa, and a bedsore formed over the sacrum. The following days increasing collapse, stupor, profuse diarrhœa, incontinence of the bowels and urine. Death eight days after the eruption of the exanthem. The temperature normal all the time. A *post mortem* was not permitted.—*Med. Chron.*

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, March 26, 1887.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

Towns	Weeks ending				Towns	Weeks ending			
	Mar. 5.	Mar. 12.	Mar. 19.	Mar. 26.		Mar. 5.	Mar. 12.	Mar. 19.	Mar 26.
Armagh -	10·3	15·5	31·0	20·7	Limerick -	25·6	36·7	27·0	20·2
Belfast -	23·9	26·0	31·4	29·0	Lisburn -	9·7	19·3	9·7	24·2
Cork -	24·0	19·5	26·0	24·0	Londonderry	28·5	30·3	32·1	39·2
Drogheda	12·7	33·8	12·7	42·3	Lurgan -	20·5	25·7	20·5	25·7
Dublin -	27·6	31·0	28·1	30·4	Newry -	28·1	14·0	17·6	17·6
Dundalk -	26·2	13·1	17·5	34·9	Sligo -	43·3	9·6	14·4	19·2
Galway -	23·5	20·2	6·7	23·5	Waterford -	13·9	20·8	25·5	23·2
Kilkenny	8·5	29·6	16·9	25·4	Wexford -	34·2	21·4	29·9	17·1

In the week ending Saturday, March 5, the mortality in twenty-eight large English towns, including London (in which the rate was 20·2), was equal to an average annual death-rate of 21·3 per 1,000 persons living. In Glasgow the rate was 25·6; and in Edinburgh it was 22·1.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 25·2 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·7 per 1,000, the rates varying from 0·0 in ten of the districts to 4·6 in Waterford—the 6 deaths from all causes registered in that district comprising 1 from whooping-cough and 1 from simple continued fever. Among the 103 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from typhus, 2 from whooping-cough, 1 from simple continued fever, 2 from enteric fever, and 1 from diarrhœa. One of the 8 deaths registered in Wexford was caused by simple continued fever.

In the Dublin Registration District the births registered during the week amounted to 201—98 boys and 103 girls—and the deaths to 190—93 males and 97 females.

The deaths represent an annual rate of mortality of 28·1 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 27·6 per 1,000.

Fifteen deaths from zymotic diseases were registered, being 13 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended February 26; they consist of 1 from measles, 7 from scarlet fever (scarlatina), 1 from typhus, 1 from whooping-cough, 4 from enteric fever, and 1 from diarrhœa.

Nine cases of scarlatina were admitted to hospital, being 2 over the admissions for the preceding week, but 3 under the number for the week ended February 19; 13 scarlatina patients were discharged, 1 died, and 78 remained under treatment on Saturday, being 5 under the number in hospital at the close of the preceding week.

No cases of typhus were admitted during the week, and there was but one case of the disease in hospital on Saturday.

Seven cases of enteric fever were admitted to hospital, being 4 over the admissions for the preceding week; 7 patients were discharged, and 17 remained under treatment on Saturday, being equal to the number in hospital on Saturday, February 26.

Sixty-two deaths from diseases of the respiratory system were registered, being 10 over the average for the corresponding week of the last ten years, and 15 over the number for the previous week; they comprise 44 from bronchitis and 13 from pneumonia or inflammation of the lungs.

In the week ending Saturday, March 12, the mortality in twenty-eight large English towns, including London (in which the rate was 20·4), was equal to an average annual death-rate of 21·6 per 1,000 persons living. In Glasgow the rate was 29·4; and in Edinburgh it was 18·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·1 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·6 per 1,000, the rates varying from 0·0 in eleven of the districts to 4·0 in Limerick—the 27 deaths from all causes registered in that district comprising 3 from whooping-cough. Among the 112 deaths from all causes registered in Belfast are 4 from typhus, 3 from whooping-cough, and 4 from diarrhœa; and the 17 deaths in Londonderry comprise 1 from measles.

In the Dublin Registration District the births registered during the week amounted to 187—100 boys and 87 girls—and the deaths to 212—111 males and 101 females.

The deaths represent an annual rate of mortality of 31·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 31·0 per 1,000.

There were but 13 deaths from zymotic diseases registered, being 18 below the average for the corresponding week of the last ten years, and 2 under the number for the week ended March 5; they comprise 1 from measles, 1 from scarlet fever (scarlatina), 3 from whooping-cough, 1 from cerebro-spinal fever, 1 from ill-defined fever, 4 from enteric fever, 1 from erysipelas, &c.

Three cases of scarlatina were admitted to hospital during the week, being 6 under the admissions for the preceding week; 23 scarlatina patients were discharged, and 58 remained under treatment on Saturday, being 20 under the number in hospital on Saturday, March 5.

Only 1 case of typhus was admitted during the week, and but 2 cases of the disease were in hospital on Saturday.

Nine cases of enteric fever were admitted to hospital, being 2 over the admissions for the preceding week; 1 patient was discharged, 1 died, and 24 remained under treatment on Saturday, being 7 over the number in hospital at the close of the preceding week.

Sixty-two deaths from diseases of the respiratory system were registered, being equal to the number for the preceding week, and 6 over the average for the 10th week of the last ten years; they comprise 39 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, March 19, the mortality in twenty-eight large English towns, including London (in which the rate was 20·4), was equal to an average annual death-rate of 22·4 per 1,000 persons living. In Glasgow the rate was 30·2; and in Edinburgh it was 19·7.

The average annual death-rate represented by the deaths registered last week in the sixteen principal town districts of Ireland was 27·3 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·4 per 1,000, the rates varying from 0·0 in twelve of the districts to 5·3 in Londonderry; the 18 deaths from all causes registered in that district comprising 2 from measles and 1 from diarrhœa. Among the 135 deaths from all causes registered in Belfast are 1 from measles, 1 from scarlatina, 2 from typhus, 1 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, 1 from enteric fever, and 4 from diarrhœa.

In the Dublin Registration District the births registered during the week amounted to 197—97 boys and 100 girls—and the deaths to 198—103 males and 95 females.

The deaths represent an annual rate of mortality of 29·2 in every

1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 28·1 per 1,000.

Only 11 deaths from zymotic diseases were registered, being 18 below the average for the corresponding week of the last ten years, and 2 under the low number for the week ended March 12; they comprise 2 from scarlet fever (scarlatina), 1 from ill-defined fever, 3 from enteric fever, 1 from diarrhœa, 2 from erysipelas, &c.

Six cases of scarlatina were admitted to hospital during the week, being 3 over the admissions for the preceding week; 10 scarlatina patients were discharged during the week, and 54 remained under treatment on Saturday, being 4 under the number in hospital on Saturday, March 12.

There were only 2 cases of enteric fever and 1 of typhus admitted during the week; 19 cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

The admissions for the week include also 12 cases of measles, of which disease there had been for some time past but very few cases in hospital.

Deaths from diseases of the respiratory system, which, in each of the two weeks preceding had amounted to 62, fell last week to 47, which number is 3 under the average for the corresponding week of the last ten years; 34 of the 47 deaths were caused by bronchitis and 4 by pneumonia or inflammation of the lungs.

In the week ending Saturday, March 26, the mortality in twenty-eight large English towns, including London (in which the rate was 21·3), was equal to an average annual death-rate of 23·5 per 1,000 persons living. In Glasgow the rate was 28·4; and in Edinburgh it was 24·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 28·4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·4 per 1,000, the rates varying from 0·0 in Cork, Waterford, Galway, Kilkenny, Wexford, Sligo, Lurgan, and Armagh, to 8·7 in Dundalk—the 8 deaths from all causes registered in the last-named district comprising 1 from diphtheria and 1 from enteric fever. Among the 125 deaths from all causes registered in Belfast are 1 from scarlatina, 5 from whooping-cough, 2 from simple continued fever, 2 from enteric fever, and 4 from diarrhœa. The 22 deaths in Londonderry comprise 2 from measles; and the 10 deaths in Drogheda comprise 1 from enteric fever.

In the Dublin Registration District the births registered during the week amounted to 190—99 boys and 91 girls—and the deaths to 212—98 males and 114 females.

The deaths represent an annual rate of mortality of 31·3 in every 1,000 of the estimated population; omitting the deaths of persons

admitted into public institutions from localities outside the district, the rate was 30·4 per 1,000.

Nineteen deaths from zymotic diseases were registered, being 8 over the number for the preceding week, but 14 under the average for the twelfth week of the last ten years; they consist of 4 from measles (all of which occurred in No. 4 South City—Grand Canal-street—District), 7 from scarlet fever (scarlatina), 3 from whooping-cough, 1 from cerebro-spinal fever, 1 from ill-defined fever, and 3 from enteric fever.

Seven cases of scarlatina were admitted to hospital during the week, being 1 over the admissions for the preceding week; 10 scarlatina patients were discharged, 1 died, and 50 remained under treatment on Saturday, being 4 under the number in hospital on Saturday, March 19.

Eight cases of enteric fever and 3 of typhus were admitted, against 2 and 1 respectively for the preceding week; 23 cases of the former and 5 of the latter disease remained under treatment on Saturday, showing an increase of 4 enteric and 2 typhus cases when compared with the number in hospital on Saturday, March 19.

Nine cases of measles were admitted, being a decline of 3 as compared with the admissions for the preceding week; 20 cases of this disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered is 53, being 3 below the average for the corresponding week of the last ten years, but 6 over the number for the week ended March 19. The 53 deaths comprise 33 from bronchitis 9 from pneumonia or inflammation of the lungs, and 4 from croup.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of March, 1887.

Mean Height of Barometer,	30·101 inches.
Maximal Height of Barometer (on 2nd, at 9 a.m.),	30·624 ,,
Minimal Height of Barometer on 22nd, at 11 p.m.),	29·120 ,,
Mean Dry-bulb Temperature,	40·5°.
Mean Wet-bulb Temperature,	38·2°.
Mean Dew-point Temperature,	35·2°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·207 inch.
Mean Humidity,	81·9 per cent.
Highest Temperature in Shade (on 28th),	55·8°.
Lowest Temperature in Shade (on 13th),	25·8°.
Lowest Temperature on Grass (Radiation) (on 13th),	20·8°.
Mean Amount of Cloud,	61·0 per cent.
Rainfall (on 11 days),	1·485 inches.
Greatest Daily Rainfall (on 11th),	·594 inch.
General Directions of Wind,	N.W., W., N.E.

Remarks.

Anticyclonic conditions, and quiet, cold, dry weather, prevailed over the British Islands, France, and Germany until the 11th. During this period depressions travelled eastwards across the north of Scandinavia, causing westerly gales and heavy falls of rain on the west coast of Norway. After the 11th conditions became cyclonic, and, as the depressions travelled from N.W. towards S.E., low temperatures and frequent falls of sleet or snow and hail were general over western Europe. On the 21st a deep V-shaped depression came in from the Atlantic, causing sleet and rain; and on the 23rd a still deeper depression passed across England, where a strong S.W. gale occurred. Towards the close of the month an anticyclone again formed, and the weather became fine and quiet.

In Dublin the mean temperature (41·3°) was decidedly below the average (43·5°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 40·5°. In the twenty-two years ending with 1886, March was coldest in 1867 and 1883 (M. T. = 39·0°) and warmest in 1868 (M. T. = 47·3°). In 1886, the M. T. was 41·4°; in the year 1879 (the cold year) it was 42·5°. As a general rule, February in Dublin is only a shade colder than March. This is owing to the continued development in February of a winter area of low pressure over the Atlantic to the northwestward of the British Isles and to a resulting prevalence of S.W. winds in their vicinity, while the Continental anticyclone embraces the British Isles and Scandinavia in March, causing easterly winds. In the present year, February was actually 1·6° *warmer* than March, and the temperature even in January was 0·2° above that of the past month.

The mean height of the barometer was 30·101 inches, or as much as 0·178 inch above the average value for March—namely, 29·923 inches. The mercury rose to 30·624 inches at 9 a.m. of the 2nd, and fell to 29·120 inches on the night of the 22nd. The observed range of atmospherical pressure was, therefore, as much as 1·504 inches—that is, a little over one inch and a half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 40·5°, or 1·9° below the value for February, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 40·3°, or 2·4° below the average mean temperature for March, calculated in the same way, in the twenty years, 1865–84, inclusive (42·7°). The arithmetical mean of the maximal and minimal readings was 41·3°, compared with a twenty years' average of 43·5°. On the 28th the thermometer in the screen rose to 55·8°—wind W.N.W.; on the 13th the temperature fell to 25·8°—wind N.W. The minimum on the grass was 20·8° on the same date. The rainfall was 1·485 inches, distributed over 15 days. The average rainfall for March in the twenty years, 1865–84, inclusive, was 2·081

inches, and the average number of rainy days was 16·5. The rainfall and the rainy days, therefore, were decidedly below the average. In 1867 the rainfall in March was very large—4·972 inches on 22 days; in 1866 also 3·629 inches fell on 21 days. On the other hand, in 1871, only ·815 of an inch was measured on 12 days, and in 1874 only ·953 inch fell, also on 12 days.

Solar halos appeared on the 26th and 30th. A lunar halo was seen on the 30th, and a faint aurora borealis on the 25th. The atmosphere was foggy on the 4th, 5th, 10th, 11th, 16th, 17th, 19th, 29th, and 30th. High winds were noted on 8 days, reaching the force of a gale on two days, the 23rd and the 27th. Snow or sleet occurred on the 11th, 12th, 13th, 14th, 15th, 17th, 18th, 20th, and 21st—nine days in all; and hail fell on the 12th, 13th, 15th, 16th, 17th, 22nd, 23rd, 24th, and 27th.

In the period ending Saturday, the 5th, the barometer was very high over Germany and France, as well as over the southern portion of the British Islands. The weather was, in consequence, quiet, dull and dry.

The weather of the week ending Saturday, the 12th, was at first generally fine and quiet, with easterly breezes in the S., but light westerly airs in the N. In the course of the week, a gradual but decided change took place in the weather over our islands. The anticyclone gave place to a period of unsteady pressure. On Friday, the 11th, rain fell in Dublin for many hours, and this was succeeded by a heavy fall of snow at night. On the 12th, there were passing showers of snow, hail, and "Graupel" (or soft hail)—at night a keen frost occurred, the screened thermometer falling to 18·2° at Parsonstown and to 25·8° in Dublin.

During nearly the whole of the following week (ending Saturday, the 19th), the dominant pressure system over the United Kingdom and its neighbourhood was anticyclonic. Low temperatures were reported from all parts, and snow and hail fell in frequent showers.

At the beginning of the week ending the 26th, the distribution of pressure was undergoing a marked change over Western Europe, and on Monday, the 21st, the first of a series of deep depressions arrived off our west coasts. The weather fell into a squally, showery state, with gales in most parts of the kingdom. On Wednesday, the 23rd, a very severe S.W. to W. gale prevailed over the south of England, in connection with a depression in the centre of which the barometer fell below 28·900 inches.

After the 27th, the anticyclone again formed, the wind lulled, and the rainy weather cleared off. During the 29th and 30th, the barometer stood at 30·30 inches or upwards over the United Kingdom, but on the 31st a depression advanced quickly from the north-westward to the Shetlands, whence it travelled southward, causing gales and heavy rain and sleet in Great Britain, while the weather was less severe in Ireland.

The month was very cold—at first dry, then snowy, and finally squally

and showery with the exception of the 29th and 30th. In Dublin, the temperature fell to or below 32° on eight days in the screen, and on twenty-six days on the grass. The mean minimal temperature on the grass was 29·2°, compared with 29·8° in February and 30·8° in January.

PERISCOPE.

NINTH INTERNATIONAL MEDICAL CONGRESS, WASHINGTON, SEPT. 5, 1886.

The following scheme of subjects for papers and discussions in the Section on Medical Climatology and Demography has been forwarded for publication by the President of the Section, Dr. Albert L. Gihon, of Vallejo, California:—I. Importance of the study of Climatology and Demography in connection with the Science of Medicine. II. What constitute determinate Climatic Characteristics. III. The effects of Climate on the human race, as manifested in local demographic conditions; and of the several elements of climate as shown by coincident meteorological, morbility and mortality statistics. IV. The question of Acclimation. V. Relative advantages of mountain and seaside resorts for recuperative purposes and as palliative or curative in certain diseased states of the system—segregation *versus* aggregation of invalids at health stations. VI. The therapeutic value of natural mineral waters. VII. Accurate records of prevailing sickness in any community a necessary factor in any comprehensive system of vital statistics. The responsibility of Governments to amply supply their people with the climatic and vital statistics of their respective countries. VIII. Collective Investigation, apart from aiding the study of the natural history of disease, as contributive of numerical data having a demographic bearing—1, as to the kinds and proportions of prevailing diseases; 2, as to the absolute amount of daily sickness and consequent loss of time, occupation, &c. IX. Medical Nomenclature considered in its practical relations to vital statistics. X. The melioration of demographic conditions effected by Preventive Medicine. Influence of the physical well-being of a population upon its economy. Offences against moral and civil law in their medical relations to demographic circumstances. Those who wish to present papers before the Section must advise the Secretaries before the first of May, 1887, and furnish them with brief abstracts of their papers before the first of June. Attention is called to the following Rule of the Congress:—"In the meetings of the Sections, no member shall be allowed to speak for more than ten minutes, with the exception of readers of papers and those who introduce subjects for discussion, who may each occupy twenty minutes." Those who intend to be present at the sessions of the Section, and especially those who desire to take part in the discus-

sions, will confer a favour by communicating with the President and Secretaries, who will be further gratified at receiving suggestions as to the work of the Section.—Albert L. Gihon, M.D., President; P. O. Box 291, Vallejo, California. Charles Denison, M.D., 245 Fourteenth-street, Denver, Colorado; Isambard Owen, M.D., 5 Hertford-street, Mayfair, London, W., England; Dr. E. Bertherand, au Secrét. d. l. Soc. Climatol. à Algèrs, Algeria; Dr. A. Wernich, Regierungs und Medizinal-rath, Cöslin, Germany, Secretaries.

SCHOOL MYOPIA.

A RECENT number of *La Belgique* contains an interesting report made to the Medical Society of Ghent by Dr. De Neffe, of that city, upon the subject of school myopia—an evil which is attracting attention in Belgium, and still more in Germany, on account of the use in that country of the Gothic characters, so severe upon the eyes. Figures and facts upon this subject have been carefully noted by the medical statisticians of both countries, who assert that at twenty years of age from 40 to 60 per cent. of the school students have become myopic; and still further, that children have scarcely commenced their school studies when their vision is found modifying itself in the direction of myopia. As a proof of this, Cohn establishes that after eighteen months of study 16 per cent. of the children examined by him have become more or less short-sighted. Anyone who has travelled in Belgium or Germany, and who has observed the almost universal employment of spectacles by young and middle-aged people, will at once recognise this great and increasing evil. Dr. De Neffe not only demonstrates the existence of this state of things, but gives detailed instructions as to its prevention, which may be summed up into care upon the part of the teachers that the scholars should always preserve a reading distance of about thirty centimetres ($11\frac{3}{4}$ inches), and that even this range of visual accommodation should be occasionally varied by their being obliged to look at more distant objects. He attributes school myopia to the habit which children have of leaning too much upon their desks, and looking too closely at their books. For the prevention of this habit he advises—(*a*) that the lighting of the school should be sufficient; (*b*) that the type of school books should be distinct (*nette*) and not too small; (*c*) that the height of the benches should be adjusted to the stature of children of different ages, so as to raise the body to a proper relation with the desk; and (*d*) that these benches should be provided with backs, so that the children, when tired, may rest their bodies on them, and shall not relieve their fatigue by resting their elbows forwards upon the desk, and thus bringing the eyes within an injuriously short distance of their tasks. There are very few schools, either British or Continental, in which all these most necessary conditions are observed; but, even where they are, Dr. De Neffe points

out that the close-vision studies should be interrupted several times a day by demonstrations or explanations, of reasonable duration, given by the teacher upon maps, pictures, or other objects distant from the children. In addition to the amount of instruction thus assimilated, with a minimal brain effort the young scholars will, during these demonstrations, lean upon the backs of their seats, expand their chests, and unconsciously alter the accommodation of their eyes to suit distant objects, thus powerfully opposing the tendency to school myopia. Lastly, Dr. De Neffe fairly remarks that a good deal of school study is accomplished at home; and it is therefore necessary to educate the parents, so that they may second the efforts of the schoolmaster in preventing, during home-study, the different reading postures and conditions calculated to bring on myopic conditions.

F. J. B. Quinlan.

HYDATID CYST OF THE SCROTUM.

At a meeting of the New South Wales branch of the British Medical Association, in November, 1886, Mr. Philip E. Muskett communicated an unique case of hydatid disease of the scrotum. The patient, A. T., aged twenty-five, a native of Lancashire, was brought out to Brisbane by his parents in 1864, when he was three years of age. In 1874 he settled down at Gympie (Queensland), a gold-mining township, situated in a sheep district, where he was on the staff of the *Gympie Times*, and subsequently on that of the *Gympie Miner*. He describes the Gympie water as being very bad, and obtained from waterholes sunk in the ground. In 1878 he first noticed a swelling in the right scrotal region, which began at the lower part and enlarged from below upwards. He took no notice of it for some considerable time, and was in the Temora rush in 1880, at which latter place he remained for fourteen months, returning to Gympie in 1882. The swelling at the beginning of 1884 was nearly the size of "two shut fists," and immediately prior to this had enlarged very rapidly. It caused such dragging pain from its weight that he at last sought advice, and consulted the late Dr. Macartney, of Townsville (Queensland), who tapped him and drew off nearly half a pint of "dirty-looking fluid." After this tapping it began to swell again, and soon reached its former size. Eight months afterwards he consulted Dr. Macdonald, of Rockhampton (Queensland), who re-tapped him, withdrawing not so much fluid as on the first occasion, about a quarter of a pint, which was much clearer than in the former instance. The latter surgeon then injected iodine into the sac, which did not give rise to much constitutional disturbance; but in three or four weeks' time it began to swell, and rapidly attained its old dimensions. He subsequently found his way to the Sydney Hospital, and was admitted July 16, 1886. There was an intra-scrotal tumour about the

size of a large emu egg on the right side. It was smooth in outline, and in its general contour nearly oval. The tumour was tense and dull on percussion, but gave to the fingers on palpation the sensation of fluid within. There was no impulse on coughing, and it was irreducible. The position of the testicle, at its posterior part, was made out by the presence of testicular sensation. The cord could not be clearly defined at the upper portion of the swelling. Light was transmitted by the ordinary manner of procedure, and finally, as was mentioned previously, the history had been that of an eight years' growth, painless except from its mere weight. The house surgeon (Dr. Westrum), on July 17th, the day after admission, tapped him with a fine exploring trocar and cannula, and evacuated about one ounce of "serous-looking fluid" of "pale yellowish tinge." A few days afterwards his temperature rose repeatedly every evening two or three degrees above the normal, being attended with much heat and swelling about the tumour. Mr. Muskett now determined (July 30th) to empty its contents, and for this purpose used a full-sized trocar and cannula, giving exit to about six ounces of purulent-looking fluid. After this a good deal of pus daily drained away, and feeling satisfied that there was something demanding freer outlet, he proposed (August 10th) to open up the scrotum antiseptically on the following morning, insert a full-sized drainage tube, and then stitch the cut edges of the tunica vaginalis and integument together. In the afternoon of the same day, however, an hydatid sac partly forced its way, and was partly extracted, through the opening left from the tapping ten days previously. It presented the usual and unmistakable characters of an hydatid sac, being grayish in colour, translucent and elastic, and in its collapsed condition was of such a size as would about fill an egg-cup. From this time the swelling gradually subsided, the sinus ceased to discharge, the scrotum returned to its normal condition, and the patient was subsequently discharged, cured.

TINCTURE OF STROPHANTHUS.

Dr. Thomas R. Fraser, F.R.S., F R.C.P. Edin., Professor of Materia Medica and of Clinical Medicine in the University of Edinburgh, writes as follows in the *British Medical Journal*, January 22, 1887:—"Judging from expressions of opinion in various quarters, the requirements of general practice would in all probability be satisfactorily met by a tincture whose doses range from five to ten minims. These doses would be obtained by a tincture of 1 in 20, prepared by the following process; and I would accordingly propose the adoption of this tincture in the future applications of strophanthus in the treatment of disease:— Strophanthus seeds, deprived of their comose appendices, reduced to powder, and dried, 1 ounce or 1 part. Ether, freed from spirit and from water, 10 fluid ounces, or 10 fluid parts. Rectified spirit, a suffi-

ciency to obtain 1 pint, or 20 fluid parts. Remove entirely the stalks and comose appendices from the seeds, reduce the seeds to a moderately fine powder, dry the powder by exposing for twelve hours to a tempera- of 100° or 120° Fahr., and weigh. Pack in a percolator (the percolator being furnished with air valves, or being otherwise so constructed that the percolation may be arrested when desired), add ether until the whole of the powder is saturated, and a small quantity of the ether has dropped into the percolator; arrest the percolation for twenty-four hours, and then continue percolating slowly until the whole of the ether has been used. If the last ether percolate should not be almost colourless, use more ether. Remove the powder from the percolator; expose to the air, and break up any lumps after the ether has sufficiently evaporated; and continue the exposure, heating the powder, if necessary, to 100° or 120° Fahr., until all the ether has evaporated, when a uniform, nearly white, dry powder may easily be obtained. Re-pack the powder in the percolator, add enough of rectified spirit to moisten it thoroughly; arrest the further flow of the spirit, and macerate for forty-eight hours; and pass rectified spirit slowly through until twenty fluid parts of tincture have been obtained. In this process, the preliminary extraction with ether is for the purpose of removing the large quantity of inert oil contained in the seeds, which, if present in the tincture, would cause it to become opalescent on the addition of water. The dose of this tincture is from five to ten minims. It may also be used in doses of half a minim to two minims, frequently repeated. It is nearly colourless, having a very pale yellow tinge; neutral in reaction, and intensely and rather persistently bitter in taste. It mixes unchanged with water, is not precipitated by solution of tannin, but becomes markedly opalescent when ether is added to it. Solution of perchloride of iron intensifies its yellow colour, and, at the same time, produces a slight haziness in the solution; and, after some hours, the slightly opalescent fluid acquires a greenish yellow colour."

CINCHONIDIN.

M. Legenis (*Arch. Gén. de Méd.*), in an elaborate paper, details the results of careful and extended observations on the action of cinchonidin and its salts on the various forms of intermittent fever. His conclusions may be briefly summarised as follows:—(1) That the salts of cinchonidin are as efficacious as those of quinine; (2) that they may be employed in all cases in which the latter are generally used; (3) that the sulphate of cinchonidin is well tolerated by the stomach in nervous persons or in those intolerant of quinine, and that it does not produce either ringing in the ears, nervous agitation, or tremors; (4) that they cost about half the price of quinine and its salts.—*Medical Chronicle.*

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XXIV.—*The Surgical Treatment of Tubercular Consumption, and of some of the Tubercular Affections frequently associated therewith.*[a] By THOMAS SINCLAIR, M.D., F.R.C.S., Eng.; Surgeon to the Ulster Hospital, and Assistant-Surgeon to the Royal Hospital, Belfast.

THE growing disposition manifested by physicians to enlist surgical aid in diseased states, hitherto regarded as purely medical, is attributable, partly to the failure of internal medication in many of these states, notwithstanding the flood of light recently thrown upon their pathology, and partly to the startling successes achieved by surgeons in operations of great magnitude and brilliance. The wave of confidence which now flows in the direction of Surgery, on account of the leading position latterly assumed by it, is of greater dimensions than the progress directly ascribable to surgery appears to warrant. Much of the recent surgical advance is due to the more exact knowledge of the causation of disease, and to the more accurate interpretation put upon signs and symptoms by physicians, leading them to form wonderfully correct estimates of the site, extent, and nature of many affections usually subjected to medical treatment only.

Professional attention is too much diverted from the sister art of Medicine at the present. Even physicians, notwithstanding

[a] Read before the Ulster Medical Society, as an introduction to a discussion on the Treatment of Consumption, on February 2nd, 1887.

the generous rivalry between the two branches in the treatment of disease, are prone to undervalue the influence of their own discoveries in ætiology and pathology in rendering justifiable, not to say inspiring, many new surgical undertakings.

There is in this resort to surgical assistance a tacit acceptance of the modern view that many diseases classed as constitutional are local in their inception, becoming general by dissemination, and are amenable to treatment calculated to remove the affected parts, while as yet the disease is strictly local.

It is just possible that surgery, with its improved methods, protectives, and dressings, may become too presumptuous, and feel encouraged to attempt the cure by surgical means of diseases not adapted for such treatment. It is to be feared that, if it do not wait a little for pathology and internal medicine, it may bring upon itself no little discredit by its new departures, rather than add to its present laurels. The questionable benefit following wholesale extirpations of the thyroid body will serve as a striking illustration of what is meant, and the fate of surgical interference in phthisis, tuberculosis of the kidney, and other vital organs, is yet to be determined.

The surgery of the lung, which is yet in its infancy, includes the operations of—1, pneumonectomy, or excision of a portion of a lung; 2, pneumonotomy, or the incision of lung tissue with a view to drainage of a cavity; 3, the injection of absorbent or antiseptic solutions into pulmonary consolidations or cavities.

All of these have been applied in the treatment of tubercular consumption—1. With regard to the ex-section of portions of a lung, it should be borne in mind that Biondi, of Naples, has performed the operation with invariable success in sheep, dogs, and cats. Parts of one lung or both apices were thus removed. Even the extirpation of an entire lung proved fatal in only half the experiments on these animals. Later, the same observer injected parts of the lungs with tubercle in similar animals, and after several weeks, when signs of tubercle had appeared, extirpated the affected portions—none of the animals dying of tuberculosis. The operation has been carried out on only one human being, with a rapidly fatal result (Druitt), and possibly most will hold with Dr. Douglas Powell that pneumonectomy "cannot yet be considered within the range of practical surgery." Nevertheless, one cannot but admit that the removal of a diseased portion of any tissue the seat of tubercle, which may destroy life by its local

ravages, or by general infection, is sound in principle, and in consonance with the modern doctrine of tuberculosis. What fails is our knowledge of the cases suitable for such heroic treatment, and the manner of performing the operation so as to offer some prospect of recovery.

2. The second operation, that of pneumonotomy, though by no means so disastrous as pneumonectomy, has not had a very encouraging record when applied to tubercular cavities. This operation does not appear to have caused death *directly*, though the hæmorrhage incident to incisions in lung tissue, when deep, is usually copious. The benefit accruing from pneumonotomy has not been striking. The class of cases of lung cavity offering any inducement for its performance are those of unilateral disease presenting one large cavity, situated near the lung periphery, with adherent pleura, with difficulty of coughing up the putrid contents, and smart feverishness. Basal cavities appear more favourable than apical, possibly because they are more suitable for drainage; apical cavities, by the aid of gravity, inclining to empty themselves by the respiratory passages; and possibly, also, because the basal are more frequently examples of pneumonic phthisis, while the apical are usually true tubercular. Further, the probability of overlooking the existence of other cavities besides the large one subjected to operation is very great, and the not remote possibility, that the disease is not confined to a single lung, forces one to conclude that the general application of the method must wait upon more exact diagnosis as to seat, extent, and number. At any rate, the decision is one to be made by the physician rather than the surgeon, and, recollecting that cavities have a tendency to discharge by the bronchi and heal in many cases, the plan is not to be hastily adopted. As Dr. Powell remarks, "excavation is a conservative process, in so far as it results in the removal of morbid materials that are far more injurious than vacuity; and it often is the prelude to changes of a healing kind."

If we admit a general resemblance between the processes of tuberculosis and pyæmia, recognising in the retained putrefying tubercular pus a source of septic matter for absorption and consequent fever, then the free drainage of such a lung cavity should to some extent diminish this absorption and fever by removing the source. But it is just here, it seems to me, that the measure is not thorough, for it is not practicable to roughly scrape the interior of such a tubercular cavity in the lung and get rid of the

really active and growing tubercle round its walls, as is possible in the treatment of a tubercular abscess in bone, in subcutaneous tissue, in lymphatic glands, or by the scraping or excision of a tuberculous joint.

Moreover, those who have examined, *post mortem*, many tuberculous lungs must have observed how seldom, even when only one cavity is presented, the surrounding pulmonary tissue was free from small secondary tubercles, scattered to distances beyond reach or calculation, which would defeat the operation.

The occasional pointing of such cavities through the thoracic walls, with discharge of their contents through sinuses, is suggested as an additional inducement to treat them by pneumonotomy, in imitation of nature.

The operation presupposes a very exact estimate of the size and site of the cavity, which should be marked by a circle on the skin. The incision is made along the lower margin of the space which crosses the centre of this circle, though in some cases it is better to resect one inch of rib at this spot. It is also of importance to indicate by a larger circle the surrounding area of dulness. Should the pleura not be found adherent at the time of operation, this must be carried out in two stages, with a three-day interval, during which adhesion takes place, facilitated in some of the recorded cases by suturing. Up to this point the strictest antiseptic precautions are adopted for fear of violent pleuritic complication. The pleural cavity being shut off, a fine aspirating needle, under slight vacuum pressure, is thrust in, it may be in several directions, till the cavity is found; a large trochar and cannula are then thrust in, and the cannula left in position. Mr. Gould introduces a drainage-tube through the cannula, and withdraws it also. Another plan is to incise the lung with a bistoury along the needle as a director, and then to introduce a pair of forceps, and tear a hole sufficient to admit the finger, after the manner suggested by Hilton for opening abscesses. Koch, of Dorpat, thrusts a thermo-cautery from the axilla, after resection of a rib, into the lung to a great depth, boldly, washing out the cavity with an antiseptic solution, and reports favourably in two cases.

It is, however, in bronchiectatic cavities and those of fibroid phthisis that the operation is likely to prove useful, marked improvement as regards cough and the amount of sputum generated having been noted in some cases of the former condition. Having regard to the chronicity of both these states, without medical or

surgical help, it is not irrational to anticipate some good from the proceeding, and it remains to be demonstrated if really any prolongation of life can be achieved in such cases. In abscess in the lung in localised gangrene and hydatids a still more successful future lies for pneumonotomy.

3. The injection of medicated solutions next requires notice:—The plan of injecting tubercular cavities during hæmoptysis with tannin has been tried by Dr. Theodore Williams. Dr. Mosler, of Greifswald, in three cases injected permanganate of potassium, through a very fine syringe, and in a patient with hæmoptysis a weak solution of perchloride of iron. All that can be said as to his results, however, is that none of the subjects were injured.

Dr. Pepper, of Philadelphia, has also three cases to his credit, and reports favourably upon one case. He employed 4 to 10 ♏ of Lugol's solution (liq. iodi., B. P., 4 ♏—℥i.), introduced through No. 1 aspirating needle under local anæsthesia at the moment of completed inspiration. Dr. Pepper recommends the same treatment for solid caseous infiltrations.

Professor Lepine and M. Truc, of Lyons, have given an extended trial to a tincture of creasote, 2 or 4 per cent., in similar cases, with the result that in 15 cases no improvement has been noted, but on the other hand no harm was done, though the amount of the solution used was, in a few instances, 20 cubic centimetres.

I think it is necessary to a calm judicial inquiry into the value of operative treatment of tubercular consolidations and cavities in the lungs, to recognise the more hopeful prognosis that seems warrantable from the revelations of the *post-mortem* room. I have myself performed many examinations of this sort in subjects dead from a variety of causes, and have examined large numbers of lungs when engaged in the dissecting-room of Queen's College, Belfast. I have been struck with the frequency of apical and other cicatrices, indicating the cessation of destructive action long previously. Moreover, in cases of senile phthisis, which is commoner than I was inclined to suppose, there were frequently cicatrices to be found, suggesting the likelihood of the disease, so late in life, having resulted from recrudescence of obsolescent tubercle, the deposit of which dated in all probability from early life. At this time it was active for a little, then ceased, and, after a long interval of dormancy, broke out afresh from some new stimulus.

Again, the ætiological theory favoured by Dr. Hermann Weber,

and very extensively assented to, that tubercle depends upon something received from without, the operation of which is at first local, becoming general later on, dictates that the extirpation of the part first infected, while as yet the disease is local, offers some prospect of radical cure. Whether this something be the Bacillus tuberculosis, or some other *materies morbi*, need not here be discussed. In support of this doctrine may be cited the fact that children of parents saturated with tubercle are rarely, if ever, tuberculous at birth, but develop the disease in some part of their anatomy at a later period, after exposure to some external exciting cause—the hereditariness of tubercle resolving itself, therefore, into a transmitted receptivity, which requires a stimulus from without to develop the malady, in this respect contrasting with syphilis, a transmitted disease. The stimulus may be climatic, or arise through employment, social conditions, &c. The infectiousness from person to person is not here specially insisted upon. The acceptance of this doctrine, and the evidence of the *post-mortem* room already cited, together with a not inconsiderable number of clinical facts in reference to the curability of tubercular states, warrant a suspension of judgment upon the surgical treatment of phthisis, and at the same time license further trial in this direction. The stricture passed by Dr. Hughes Bennett in Reynolds' System is too absolute and premature when he says, "The result of all these efforts has been—what an intelligent consideration of the pathology of the disease might have anticipated—a uniform failure." The keynote of modern teaching in this relation is that there is a tendency to repair in tubercular affections under favourable circumstances—the lung cicatrices, the ankylosed joints and spines, the closure of abscesses pointing to more painstaking treatment and more cheerful prognosis.

A word or two respecting pleurisy and empyema of tubercular origin.

At the outset it is necessary to distinguish between the pleurisy produced by the irritation of tubercle in the lungs or bronchial glands and tubercle of the pleura. What follows has reference to the latter condition. It is difficult to be certain that a patient is the subject of primary tubercle of the pleura, but the occurrence of pleurisy, without ascertainable cause, of a patchy character, its occurrence on both sides, associated more with evening rise of temperature than with copious effusion, point in this direction; but until lung signs are superadded it is not easy to decide. And

the indecision is greater where a hitherto simple pleurisy *becomes* tubercular—a not uncommon development.

As a feature in general tuberculosis its treatment need not be considered. Most authorities are of opinion that operative measures had better be avoided in tubercular pleurisy and empyema, but the uncertainty in diagnosis, it appears to me, favours its employment; otherwise simple pleurisy and empyematous cases may be allowed to die where an operation, of no great gravity in itself, would have saved them if they had not been mistaken for tubercular. Dr. Clifford Allbutt recommends that in tubercular pleurisy aspiration should be done when the fluid is embarrassing, just as in simple cases. The temporary relief is very great and justifies the proceeding, though cure is not anticipated, even when purulent aspiration may be done tentatively, to see if the lung will not suffer by complete removal, but as soon as possible an intercostal space should be opened and the pleura drained. Excision of a rib is probably unnecessary in tubercular cases, as a cure is hardly to be expected, and the necessity of providing for drainage for long periods is not apparent. Difference of opinion prevails as to the use of antiseptic syringings. Dr. Clifford Allbutt objects to them, believing that perfect drainage is everything; Guttmann uses a glycerinic suspension of iodoform; Mickulicz, small sticks of iodoform dropped into the cavity every 24 hours; others employ weak iodine, salicylic or boric lotions, or Condy's fluid. Having regard to the extremely offensive character of the discharges and the high fever in tubercular empyemata, I think some non-poisonous, non-irritating antiseptic, like boric lotion, is indicated, more particularly as *comfort* rather than *cure* is contemplated. Posterior (or, better, postero-lateral) openings are to be preferred. The recent suggestions of Professor Marshall to open empyemata in front at the 5th costo-chondral or 2nd costo-chondral junction, for the reason that if left to Nature they point here, have not met with approval.

In pneumothorax there should be no hurry in evacuating the air, or air and fluid, as its pressure on the burst lung favours healing of the rupture and happily of other lung cavities as well.

In tubercular laryngitis radical extirpation is not to be thought of, and tracheotomy in such cases is generally condemned. If ever resorted to, it should only be in those instances where an acute inflammation is engrafted upon a tubercular laryngitis that has not exhausted the patient's powers, where a prospect of living a considerable time is seen. Cases of this kind, where the dyspnœa

would warrant tracheotomy, are infinitely rare, if, indeed, in such the dyspnœa ever reaches such a height; and for advanced ulceration the operation should never be done. The less the parts are touched the better; hence it is more advisable to employ insufflations of morphin or cocaïn, combined with iodoform or boric acid, and diluted by tragacanth, applied by insufflators with apertures on the convexity, concavity, or sides as the ulcers may require, aim being taken for the ulcers by laryngoscopic illumination, thus avoiding injury by the beak of the insufflator. The mechanical irritation of brushes, sponges, &c., is to be condemned, though the application of a 20-grain solution of nitrate of silver *at times* deadens the pain in a very marked degree.

Tuberculosis in the Alimentary Canal.—The extensive subjects of tubercular enteritis and peritonitis I must be content to dismiss with the remark that their surgical interest is not yet apparent, while their treatment by medical means is not at all encouraging. I limit myself to the beginning and end of the alimentary tract—to tubercular ulceration in the mouth and to fistula in ano.

In some cases of pulmonary or laryngeal phthisis, ulcers of a tubercular character are occasionally met with on the tongue, on the palate, and sides of the mouth. They are rare, and always secondary to these phthisical states. They are best treated by scraping with a Volkmann's spoon and subsequent dressing with iodoform or nitrate of silver. Excision, it is stated, is sometimes but very rarely needed.

Fistula in Ano.—The ætiological relation between this affection and tubercle elsewhere is not satisfactorily established. It occurs in about 5 per cent. of phthisis cases, and almost invariably in males; and if due, as some suggest, to the swallowing of tubercular sputa, why does it not occur in females as often as males? and why does it occur in some instances before tubercle of the lungs? and lastly, why does it occur in non-tuberculous people? The discussion of its surgical treatment, I think, necessitates the arrangement of fistula cases in three categories:—

1st. Those unconnected with tubercle, wherein the value of operative interference cannot be questioned, but which do not concern us now.

2nd. Those chronic fistulæ, simple for a time, but which become tuberculous later on, leading probably by infection to the development of tubercular consumption. It is worthy of note that in the walls of such fistulæ tubercle bacilli have been frequently found.

In this group early cutting and clearing away of the indurated tubercular lining of the fistula is certainly indicated, and may be followed not only by local healing, but secondary tuberculosis of the lung or other vital organ may be obviated. The method by ligature does not commend itself here, as it affords no opportunity of radically removing the tuberculous tissue of the walls.

3rd. The largest group comprises cases occurring in the course of phthisis, which has abundantly declared itself by signs and symptoms referable to the lungs. Here fistula is a subordinate feature, and should not be operated upon, unless the symptom of pain is so marked as to demand treatment of a symptom. The objections to operating on such subjects are:—1st. The risk of non-healing in diseased tissue; 2nd. The risk of exciting renewed activity and fever in lung cases, though it has occasionally been observed that the opposite effect has followed—viz., the slower progress of the process in the lung for a time following the operative treatment of the fistula.

The success following operations upon the kidney in the human subject, such as nephrectomy and nephrotomy in conditions other than tuberculosis, has directed inquiry towards settling the question whether either of these proceedings is applicable in tubercle of the kidney. Here, as elsewhere, surgery is as impotent as medicine in general disseminated tuberculosis; but when caseating tubercle is confined to one kidney and its pelvis, constituting what is known as scrofulous pyelo-nephritis, the operation of nephrectomy is recommended by Mr. Henry Morris, who ranks at the moment as our authority in renal surgery. Twenty cases are on record with twelve recoveries—in other words, a mortality of 40 per cent.—showing that very great encouragement is given to attempt the prevention of a fatal disease. This record contrasts very favourably with pneumonectomy. It is essential that the other kidney be free and competent. Now it is no easy matter to determine this point, although of much greater moment here than in malignant tumour or stone, where the chances are in favour of its immunity. Bilateral disease occurs just about as often as unilateral, and the younger the patient the greater the chance of its being bilateral. The absence of signs referable to the other kidney, and the presence of the normal amount of urinary solids, go far to attest its freedom.

A large renal abscess from irritation of tubercular deposit is to be treated by nephrotomy and drainage, as also a perinephritic

abscess due to the bursting of a tuberculous pelvis, seeing that these measures offer the only prospect of prolonging life for a time. The prospect of complete cure is not so great as the removal of the entire deposit would ensure, and the only deterrent from nephrectomy is the fear of the other kidney being unsound. However, a small single abscess has been cured in a few cases by nephrotomy and drainage; but multiple abscesses had better be treated by nephrectomy, particularly in the adult cases, wherein the disease is more commonly one-sided. Tubercle of the bladder and prostate develops usually in association with renal tuberculosis, and accordingly in treating of this obscure affection of the bladder I do not dissociate it from the kidney.

I saw at various times, during an illness of twenty months, a young man, aged twenty, belonging to a tubercular family, who illustrated the course and effects of treatment in tuberculosis of the urinary tract, more particularly of ulceration of the bladder. His symptoms at first suggested stone; but the absence of this was over and over again proven. Inability to retain urine; pain at head of penis; pain and tenderness on deep pressure in the perinæum; passage of large quantities of flaky pus; occasional blood-clots and shreds of blood-stained tissue floating in albuminous urine; slight evening rise of temperature, and progressive emaciation, complete the list. No lung disease developed throughout, and he died of uræmia. The passage of sounds, and even soft instruments, caused great pain and spasm at the neck of the bladder. There was no stricture or gonorrhœa. The diagnosis was confirmed by the surgeons of St. Peter's Hospital for Stone, and by many English and Irish surgeons. He was at various times under hydropathic, homœopathic, and allopathic treatment without avail; Turkish baths, sitz baths, hot fomentations and cold packs had their day; the cystitis drugs were exhausted; a pure milk diet followed; next blistering the perinæum; then a course of washing out the bladder, which was attended with the most rapid advance of the disease in the whole history. Early in the disease, before the diagnosis was established, I found that a 20-grain solution of nitrate of silver gave great relief, and enabled him to retain water for two hours at a time and obtain sleep. I had the opportunity of applying it only twice when he was transferred to the country.

I mention these facts in the treatment less for the purpose of recommending them, than for the striking accord in which they stand with Dr. Powell's observation as to the value of strong silver

nitrate solutions in laryngeal phthisis, and for the illustration the course of washing out the bladder affords of Sir Henry Thompson's remark—that the less instrumental help is used in tubercular cases the better.

Tuberculosis of the testicle frequently is primary, but in a larger number of cases is secondary to tubercle of the lungs, kidneys, bones, or joints. It may also form a part of general tuberculosis.

When primary, its commencement will commonly be noted in the epididymis, from which it spreads to the testis, and, more important still, along the vas deferens to the vesiculæ seminales and bladder, not to mention the frequent infection of more distant organs, especially the lung. The primary cases must be dealt with decisively if no infection of distant organs has occurred. Castration should be done at once. Should both testes be affected simultaneously, and the disease be limited to them, remove both. The same remark applies to recurrence of the disease in one organ after the removal of the other some time previously. The urgency is due to the rapid implication of the bladder or lung in many examples of tubercle of the testis. Operative interference in secondary cases, or in those primary ones where the lungs or urinary tract have become involved, should be reserved for suppuration in the testis, and should then take the form of incision with scraping away of the tubercular matter and subsequent packing with iodoform. Castration should *not* be performed unless it be a lighter undertaking than that suggested in any given instance.

Tuberculosis of the eye-ball next claims attention. Passing over the form of ophthalmia, or more correctly keratitis, usually called strumous, as not presenting histological evidence of tubercle, however closely associated with struma, and tubercle of the iris, the treatment of which is also mainly medical, I pass on to tubercle of the chorioid, its favourite seat. Beginning in the deeper layer thereof, its presence is not at first detected from the non-implication of the retina. It might be thought that early excision could be practised in a non-vital part like the eye with advantage in primary tuberculosis of the chorioid, but several considerations act as deterrents—viz., 1. The disinclination on the part of a patient to lose an eye which has still some vision and gives him little pain. 2nd. The possibility of taking a syphilitic for the much rarer tubercular chorioiditis, and excising an eye which should have been left alone. 3rd. The rarity of finding tubercle in the eye of size and distinction to justify diagnosis and excision, without there being

tubercular meningitis or other contra-indicating tubercular affection in some part of the body.

In the specimen exhibited under the microscope, showing a section of one-quarter of a globe filled with caseous tubercle, there could be no doubt that excision should have been done—the case treated, in fact, like a melanotic sarcoma of the same membrane, and for the same reason—viz., to prevent general infection by removing a focus.

Contrasting in a marked degree with the progress of tubercle in those organs furnished with mucous membranes, from which general infection arises with greater ease and frequency, suggesting heroic treatment, are four other tissues from which infection is decidedly exceptional. These tissues are the lymphatic glands, bones, joints, and skin; and the fact above alluded to, coupled with the tendency to arrest shown by tubercular diseases of these four tissues, justifies a more conservative handling of them. The surgical treatment of bone and joint diseases is much more satisfactory and successful than formerly, arising from the value attaching to absolute rest of the affected parts. Perhaps the impossibility of securing this rest for organs like the lungs, kidneys, and alimentary canal, with vital functions to perform, accounts at once for the greater tendency of tubercle in these to advance to a fatal termination, and for the frequent unsuccess attending the medical and surgical treatment thereof. Be this as it may, conservative treatment is indicated in the four tissues named, although this statement is apparently at variance with the local view of the pathology of tubercle already expressed, and which would lead to attempts being made to remove localised tubercle at the earliest possible moment. Here pathology must be qualified by clinical experience, and hence the recommendation of the expectant plan.

As the intention is to confine the present discussion to the treatment of phthisis and to those tubercular affections more frequently associated therewith, rather than to diseases of the four tissues indicated, I must dismiss these with a few brief general remarks.

In this connection I probably use the term "tuberculosis" with greater freedom than many observers, who are guided chiefly by clinical experience, may be inclined to permit. I shall assume that clinical observers have yielded to pathologists in the matter of the identity of scrofulosis and tuberculosis, since it is beside my present purpose to present numerous arguments for or against this identity. The modern view, of which we take Professor

Volkmann as the exponent, assumes three tests for tubercle to be conclusive as to its presence. Even two may be depended on—viz., the inoculability of the products, the presence of giant cells and tubercle bacilli. It is in reference to the four tissues named that very many medical men manifest a lingering regard for the term "scrofula," seeing that secondary infection of the vital organs so rarely results in the history of the chronic diseases of these parts. They accordingly infer that the contrast between tuberculosis in other parts when compared with these justifies a separate pathology.

But the discrepancies in the clinical history of tubercle of joint-structures and glands and tubercle of the lungs may be otherwise accounted for, and that tubercular processes may occur in bone, synovial membrane, and other structures, the microscopic specimens exhibited go far to prove. Further, giant cells and bacilli are found in diseased joint-structures, bones, and glands, and the products in such cases are inoculable.

Why does phthisis so seldom arise by infection from tuberculous glands? Volkmann teaches that the glands act as interceptors, in a manner comparable to the bubo of non-infecting syphilis. Should the poison escape the glands, its entrance into the thoracic duct means diffusion and general infection, which has been noted in a considerable number of cases.

My personal experience of excision of glands extends to three cases; in one the removal of three non-suppurating glands in the neck was not only easy but followed by a satisfactory result; in the other two instances, also in the neck, suppuration had occurred, and the boundaries were obscured by the inflammatory matting of the tissues. The healing, I believe, was promoted by the removal of the glands, as far as they could be recognised and followed; still one could not be sure of the number affected, or the completeness of the removal. The opinion I formed leads me to endorse the view that excision should be reserved for very chronic cases, wherein two or three large superficial non-suppurating glands are affected, and it should be done more for cosmetic than for clinical reasons.

When general infection arises from tubercular osteitis or arthritis, it takes the form of tubercular meningitis oftener than pulmonary phthisis.

Phthisis, secondary to disease of bones or joints, is met with in only 2 per cent. of the joint cases, and, when it occurs, is said to be favourably influenced by the removal of the bone or joint focus,

provided this be carried out in the early stage of the lung trouble. I have before my mind at present an instance of hip excision wherein this was exemplified; but very slight reparative action took place at the hip. The disease in the lungs extended but little during many months, and the patient died from amyloid degeneration and exhaustion, rather than from the lung trouble. Lest we should be tempted, in consequence, to operate frequently upon such material, it is well to qualify this statement with König's observation that general tuberculosis in joint and bone cases is usually met with in those *recently operated* upon; hence, an adverse influence might be exerted in some cases upon the lung disease by an operation on a joint or bone. It cannot be too much emphasised that operations on bones and joints should not be undertaken during activity of the tubercular process. While this is actively progressing new tubercles are invading the neighbouring parts, and are liable to be left behind in a scraping operation, causing a recurrence of the disease.

It is to be borne in mind that spontaneous cure in joint and bone diseases, however fortunate it may seem, yet renders the patient more liable to recurrence upon a renewed stimulus being applied than if a radical extirpation of the local tubercle had been effected. This is due to tubercle, in a now quiescent state, existing still at the old site. Hence, it is safer to perform an osteotomy near an ankylosed joint than to disturb the joint itself.

In regard to the influence of injury in causing tubercular disease of bones and joints, a curious fact has been lately pointed out by Volkmann—viz., that a slight injury, productive of a *low* degree of inflammation, is much more potent than a severe injury. The severer injury produces an acute inflammation, which does not provide a favourable soil for tubercular seed.

In endeavouring to account, on the other hand, for the greater frequency of general infection from lungs, alimentary canal, and genito-urinary tract, as compared with glands, bones, joints, and skin, Mr. Makins points out that "the entrance of tubercular matter into canals or cavities with mucous lining, where stagnation is possible or actual length renders long contact possible, favours general infection."

The important observation of König—that general tuberculosis, following disease of joints, occurs commonly in patients who have recently been operated upon—suggests that tubercle may enter the system by open veins.

When an imperfect operation on joints and bones fails to entirely remove the tuberculous matter, at the same time that a cut surface with open veins is provided, quite equal to a mucous surface for absorption, then a closer resemblance may, in some instances, be brought about between the course of tuberculosis of lung, alimentary canal, and urinary tract, and scrofulosis in joints and bones, which may help to establish the identity of scrofula and tubercle.

The outcome of all this reasoning is, that conservative surgery is indicated in joints, bones, glands, and skin; but when operative interference is called for it should radically extirpate the local tubercle; otherwise, if half done, it favours general infection more than when left untouched.

Art. XXV.—*Pylorus Resection.*[a] By J. S. M'Ardle, F.R.C.S.I.; Lecturer on Surgery, St. Vincent's Hospital, Dublin.

As evidence of the importance of this question of pylorectomy, I desire to call attention to the following figures, which show how frequently cancer of the stomach is confined to the pyloric end:—

Habershon collected 79 cases of cancer of the stomach, and of these 41 were of the pylorus, 11 of the lesser curvature, and 10 of the cardiac end; the remainder being examples of diffuse carcinoma. Brunton collected 360 cases—219 of the pylorus, 38 of the lesser curvature, and 36 of the cardiac end. The greater curve, anterior and posterior surfaces, each were attacked in 11 instances, while in the others the disease was widespread. Gussenbaur and Winiwarter examined, in the Pathological Institute of Vienna, 903 cases, and of these 542 were of the pylorus, 65 of the lesser curvature, and 58 of the cardiac end; in the remainder the disease appeared as scattered nodules, or as a general implication of the stomach.

Thus we see that in more than 50 per cent. of all the cases of cancer of the stomach the disease was confined to the pylorus. Of this number more than half will come within reach of surgical aid, for, as shown by Gussenbaur and Winiwarter, of 542 cases of cancer of the pylorus only 252 were complicated by enlargement of glands, infiltration of neighbouring tissues, or adhesion of the tumour to adjoining viscera. Thus, one-fourth of all the cases of cancer of

[a] Read before the Surgical Section of the Academy of Medicine in Ireland, Friday, February 18, 1887.

the stomach would come within our reach. Habershon remarks that patients affected with cancer of the pylorus die within one year of the appearance of the tumour. Many instances are now recorded of patients living four and five years after resection of the pylorus for cancer. Now, if the removal of the diseased structure will relieve the misery and prolong the life of our patients we must look upon pylorectomy not only as a justifiable but as a necessary operation. It may be argued that a return of the cancer is certain, but Winiwarter has shown that the recurrence is not as frequent or as rapid as after removal of the breast for cancer, and permanent healing is not less frequent. Even should we expect an early recurrence we may console ourselves by the knowledge that however soon the disease reappears it never leads to obstruction, or indeed to marked intestinal trouble of any kind.

The operations proposed for the relief of stricture of the pylorus, whether simple or malignant, are—Jejunostomy, as conducted by Surmay and Langenbuch; gastro-enterostomy, as performed by Wölfler; digital dilatation, as described by Loreta; pylorectomy, first performed in the human subject by Péau; and the combination of gastro-enterostomy and pyloric resection, introduced by Billroth.

The results of jejunostomy have up to the present been very discouraging, and even though life may be occasionally prolonged by its performance, the great inconvenience of an intestinal fistula and the merely temporary benefit derived will deter most surgeons from undertaking this operation, unless in cases of extensive infiltration, in which removal cannot be accomplished.

Gastro-enterostomy has the fatal objection that, while being a dangerous and tedious operation, the cancer is left to kill the patient just as rapidly as if no treatment had been adopted. Of the eight cases conducted in Billroth's klinik five died, as a result of the operation; of the others one died in a month, another in two months, the third in the fourth month after operation. This is a sufficiently bad record to deter one from operating after this fashion.

Digital dilatation, as proposed by Loreta, has been carried out in 12 cases, with four deaths as the result of the operation. One of the remaining 8 is said to have been alive and well six months after the operation; the others seem to have been lost sight of. Of course this operation is suited only to simple stricture, as any

breaking down of cancerous tissue in such a vascular neighbourhood would only lead to rapid development.

Billroth's complex operation has as yet succeeded only in one instance, and the case was in every way a favourable one. In bad cases the operation must be so protracted that recovery can hardly take place if the patient be at all broken down. This leaves pylorectomy as the only hope for cancer, and (as we shall see later) the most reliable means of treating simple stricture.

The case which excited my interest in this subject is briefly as follows:—

Case.—J. O'N., aged forty-six years, was admitted into St. Vincent's Hospital on May 31st, 1886, under the care of Dr. Cox, who handed him over to me for operation, which I performed after Billroth's method on the 18th June, 1886, making, however, a vertical instead of a horizontal incision through the abdominal wall. The tumour measured $2\frac{1}{2}$ inches along its upper and 2 inches along its lower border. I applied the duodenum to the greater curvature, using a double row of catgut sutures. The operation lasted nearly three hours, and during that time small nutrient enemata were administered, and we found it necessary to give him hypodermics of ether. The patient was removed to bed, and although he rallied somewhat, he died from exhaustion four hours after operation. The *post mortem* showed that all traces of the disease had been removed, and on taking out the stomach and duodenum the lines of incision were marked by a gelatinous material covering the sutures. On distending the stomach with water, no escape took place, showing that accurate apposition had been brought about.

The failure here evidently resulted from the exhaustion produced by the prolonged operation on an individual so worn out by inanition. To ascertain the method which diminishes the length without influencing the completeness of the operation was my first object in collecting and reviewing all the published cases of pylorectomy.

In looking over the field of gastric surgery one is struck by its narrow limits, and in a marked way is reminded of the early days of ovariotomy. On the very threshold of the inquiry the question arises—Why the ill success of this operation? To my mind the answer is the one given to a similar query in reference to the early and even some of the late ovariotomies—viz., that the cases operated upon were unsuitable, or the details of the operation were ill understood.

So much depends on carrying out the many details, and so few

have anything like an extensive personal experience of it, we must collect and study the views of the various workers in this field, in order that, learning from them the difficulties which attend almost every step of the procedure, we may be prepared to overcome them. Morris, in Ashhurst's "Encyclopædia of Surgery," says:—"As yet the surgical mind is not settled as to the conditions for which the operation should be performed, or as to the precise steps of the operation." The instances of pyloric resection are now sufficiently numerous to allow of some effort being made in both directions. My reference to the subject would therefore naturally be divided into two parts—first, from the cases which I have collected to ascertain the characters of those which have been successfully operated upon; and second, to examine into the influence of the different operative procedures on the results obtained.

The records within my reach, including all the original communications of those who have advanced this subject, yield, after careful perusal, 70 cases of complete pylorectomy. Of these 8 were on account of simple stricture, 62 for cancerous disease. Of the cases conducted for simple stricture, 5 are recorded by Rydygier, and of these 4 were completely successful; the fifth died on the seventh day. Of the 3 recorded by Hacker, 1 died in 14 hours, another on the seventh day, the third completely recovered. Of the 62 cases operated on for cancer, 21 died as a result of the operation; 14 from peritonitis or septic absorption; the remaining 27 made good recoveries, many of them being reported well four years after operation. Thus 35 of the 62 cases of cancer died, while only 3 of the 8 cases of simple stricture succumbed. The markedly high mortality of the former class becomes at once apparent, and in seeking its cause we learn the conditions which contra-indicate the operation.

In the 21 cases in which death occurred within 24 hours of the operation, the patients were already worn out by disease, and the tumour was in each case attached to important viscera. In the 14 cases in which death occurred within 14 days of the operation, adhesions were extensive, but the patients were not so exhausted; and in the 27 cases of recovery we find that adhesions were absent or very slight, few of the operations lasting more than one hour and a-half. Turning to the cases undertaken for simple stricture, we learn that death occurred only in those cases in which adhesions were present in a marked extent. So important is this question of adhesions that Hacker divides his cases into three classes—those

having no adhesions, those having slight adhesions, and those having extensive adhesions—and of 15 cases of cancerous stricture operated upon in Billroth's Klinik, 2 were of the first class, and no death occurred; 8 were of the second class, with 3 deaths; 5 of the third, with 5 deaths; and so it is through the list of cases I have collected. When adhesions were absent recovery took place, but in no case, where adhesions were extensive, did the patient live more than a few days.

A question of great importance arises in reference to these adhesions—Where do they most frequently occur? The statistics published by Gussenbaur and Winiwarter show that in 252 cases in which adhesions were present the tumour was attached in 116 instances to the pancreas, in 71 to the omentum, in 65 to the transverse colon. In the 37 cases which I have collected, the tumour adhered to the pancreas in 16, to the great omentum in 9, to the transverse colon in 7, the liver in 4, the small intestine in 1.

Thus we learn that the pancreas is the most frequent point of attachment of the tumour. Now, if the adhesions are here broken down, the secretions of the gland pour through the lacerated part and digest the wound-border. The omentum comes next in frequency as the point of attachment, and although separation from the omentum would not be of much consequence, it is found that when the tumour adheres to the great omentum there is usually a considerable amount of infiltration along the greater curvature, and a frequent result of operation under these circumstances is a sloughing of the wound-border, and, of course, death. Next comes the transverse colon, and, if the adhesions be extensive, removal of the tumour is followed by gangrene of the colon. So certain is this to occur that Lanenstein and Czerny have recommended resection of that portion of the colon to which the tumour adheres. This is, undoubtedly, a wise proceeding, not only on account of the danger of gangrene, but on account of the great delay occasioned by separating the parts. I have called attention to these definite points of attachment as landmarks for our guidance in digital exploration of the abdomen.

Since the chief causes of the high mortality after this operation are—first, the presence of extensive adhesions; second, exhaustion from long-standing disease—we may look upon the following as the conditions under which the operation is likely to prove successful:—

1st—In irritable and intractable pyloric ulcer leading to spasmodic stricture.

2nd—Simple fibrous stricture.

3rd—Circumscribed cancer without adhesions, and before exhaustion has occurred.

It may be asked how we are to determine the presence of these conditions, and the answer is that such as are not readily made out by ordinary diagnostic methods are ascertained by making a digital exploration of the pyloric district—an operation which, conducted with ordinary care and through a limited wound, is devoid of danger, and yields invaluable information.

We now come to the study of the operative procedures carried out with the object of removing the pylorus, and we find that there are modifications numerous as the operators, but for all practical purposes we may confine ourselves to the chief points of difference in carrying out the following steps of the operation :—First, section of abdominal wall; second, detaching the tumour from the omenta; third, cutting through the stomach and duodenum; fourth, suturing the duodenum to the remains of the stomach.

Section of the abdominal wall is made by Czerny in the linea alba above the umbilicus. He claims for it the advantage of being a bloodless operation, but it has the serious objection of necessitating dangerous traction on the descending duodenum, and in my case I found it quite impossible to complete the removal of the tumour without making a transverse incision near the upper end of the vertical one. The delay occasioned by endeavouring to work through a central wound is also considerable, and is a fatal objection to this method.

Rydygier makes a vertical incision two fingers' breadth to the right of the linea alba. This allows free access to the neighbourhood of the descending duodenum, and owing to the mobility of the stomach the line of incision of that organ can readily be brought to the abdominal wound.

Billroth and Wölfler make a transverse incision across the tumour, usually some inches above the umbilicus. This allows the operation to be completed without undue traction on any part of the intestine or stomach, and the ready access which it gives to the diseased area hastens the operation so much that the slight delay occasioned by checking hæmorrhage from the abdominal wall may be overlooked.

Hagen Torn cuts through the muscular wall of the abdomen, so that the resulting cicatrix may be firm and hernia prevented.

An incision parallel to the lower border of the thorax has been

recommended, but it is not to be compared with the transverse, or even with Rydygier's incision.

In reference to the separation of the tumour from the omenta there are two points of importance—first, the danger of removing too much of the omentum, or of making the section too close to the intestine; second, the delay caused by this step of the operation. If the omentum be cut more than a few lines beyond the line of incision through the stomach, there is, as shown by Rydygier, danger of sloughing of the wound-border, while section close to the intestine causes, as noted by Czerny, gangrene of that portion from which it has been removed. The delay occasioned by ligaturing the omental vessels separately is quite unnecessary, as a considerable number can be safely occluded by passing under them a blunt and pliable aneurysm needle loaded with a double catgut ligature.

When adhesions are present, their separation is the most tedious part of the operation; and Czerny holds that in simple stricture we should, in removing the tumour, leave the serous coat of the stomach attached to the viscera in order to shorten the operation, and this especially when the pancreas or colon comes in question.

The next step in the operation—section of the stomach and duodenum—is of some importance, and in reference to it we must decide three questions:—First, How are we to deal with the contents of the stomach and duodenum during section? second, In what direction should section be made? and third, How is section to be made?

The contents of the stomach and duodenum must be kept from pouring into the abdominal cavity during section, and for this purpose Rydygier uses elastic compresses, Gussenbaur employs a clamp or forceps, while Shede, Billroth, and others, apply a loop of silk, a piece of elastic drainage tube, or a strip of iodoform gauze round the duodenum, the stomach being compressed by the hands of an assistant. Modifications of the instruments used by Treves, of London, and Bishop, of Manchester, in intestinal resection, can be employed in pylorectomy. There are two objections to Rydygier's methods, and they apply to Gussenbaur's also—first, the compresses or forceps impede the laying on of the posterior sutures; and second, they compress the vessels, so that points which will bleed some hours after their removal are for the moment stopped, and ligatures cannot be applied. Manual compression is no doubt the best, but before operation the stomach should be thoroughly irrigated, and after section it should be sponged out, and a small sponge

should be passed into the orifice of the duodenum. During section a soft flat sponge is placed behind the tumour.

The line of incision of the stomach is of such importance that I must call attention to the accompanying diagrams, which show the different lines of section and the manner of applying the duodenum to the remains of the stomach. Figs. 1 and 2 show the stomach before and after vertical section and the removal of a V-shaped piece from the greater curvature, the duodenum being applied to the lesser curve. This was first done by Rydygier and afterwards by Billroth. Figs. 3 and 4 represent a much better method, in which a cancer extending along the lesser curve was removed by an angular incision, the duodenum being attached to the greater curve. Figs. 5 and 6 show the worst possible incision—vertical with application of duodenum to the lesser curvature. In the case in which Billroth carried out this method a large pouch formed, owing to the collection of food in the lower angle of the wound, and led to fatal peritonitis. Figs. 7 and 8 show the result of another case of Billroth's, and the incision is not to be recommended, since at the joining of the duodenum to the central vertical part (marked *a* in the diagram) it is difficult to close accurately the points (*b* and *c*). On the whole, the section as shown in Figs. 9, 10, and 11 will be found to answer best in most cases. Fig. 9 represents the lines of incision; Fig. 10 the state of things immediately after operation; Fig. 11 the condition of the stomach when removed from my patient sixteen hours after operation. This method of oblique section, applying the duodenum to the greater curve, is the one now most frequently adopted by Billroth, Wölfler, Rydygier, and others.

The stomach and duodenum may be cut through by cautery knife or scissors. The cautery, I believe, produces very severe shock, and I think peritonitis would be very likely to follow its use. In my case collapse occurred immediately on passing the cautery through part of the stomach wall. The knife is slow, and in an operation in which rapidity is of such moment, any means of hastening it should be sought. The scissors seem to me to answer admirably, and I have used them in intestinal resection with great comfort to myself. Rydygier has recommended a very long-bladed, probe-pointed scissors for the purpose, and they will be found very useful.

We next come to the suturing of the viscera, and it is well to bear in mind that the duodenum should be applied so that no

Fig. 1.

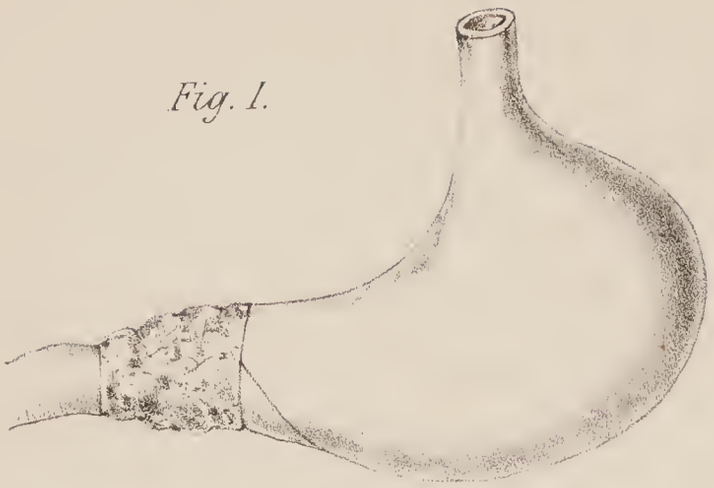


Fig. 2.

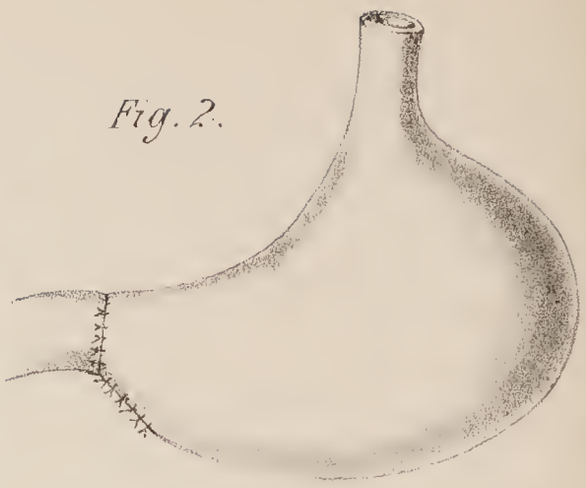


Fig. 3.

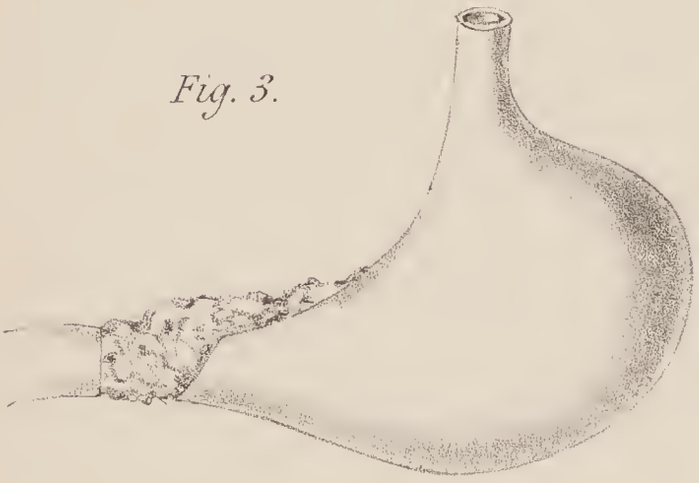


Fig. 4.

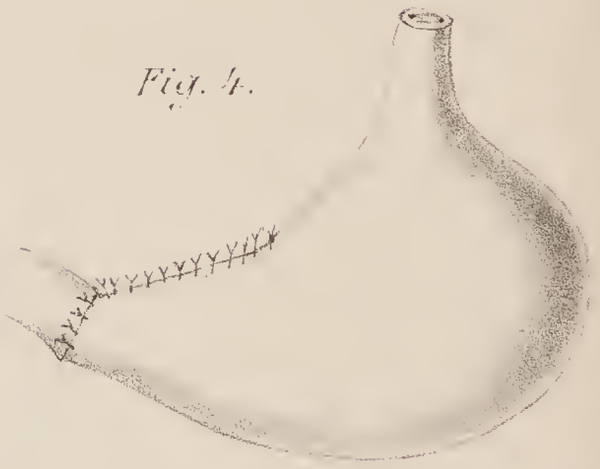


Fig. 5.

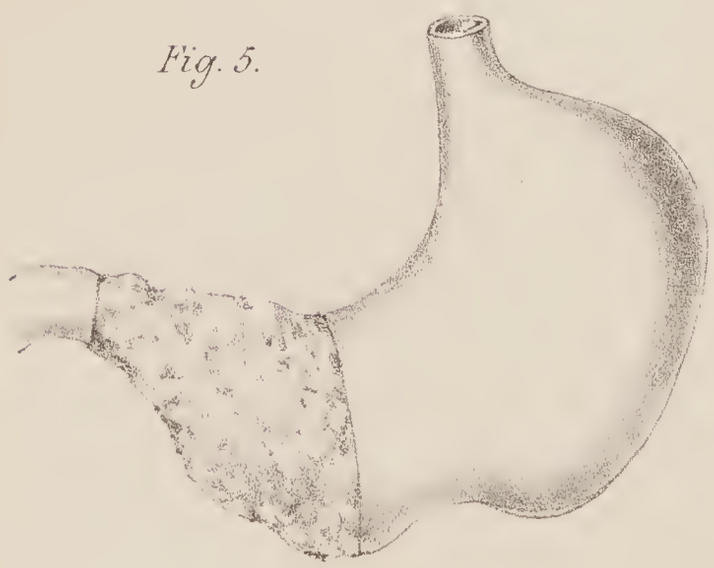
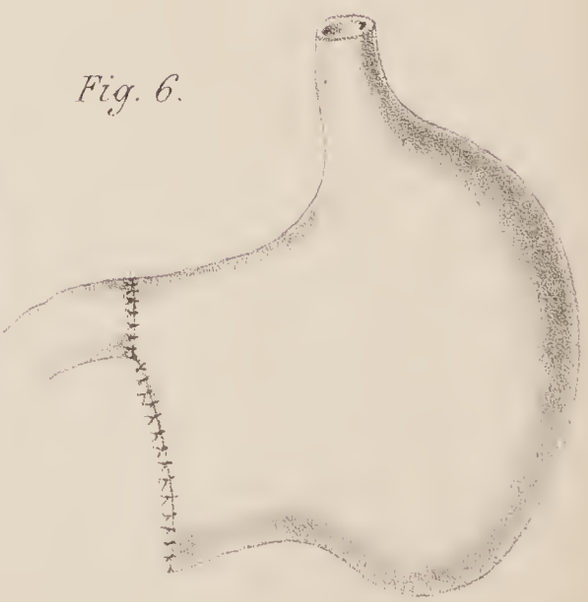


Fig. 6.



F. Huth, Lith.r Edin.r

Mr. Mc. Ardle on resection of the Pylorus.

Fig. 7.

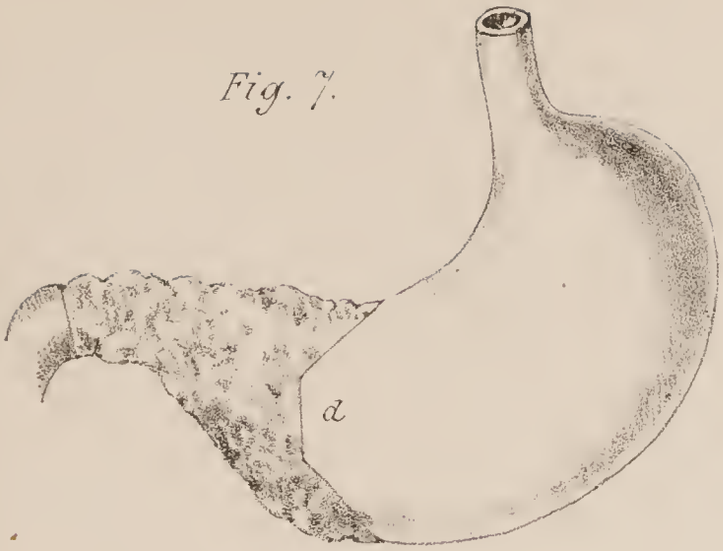


Fig. 8.

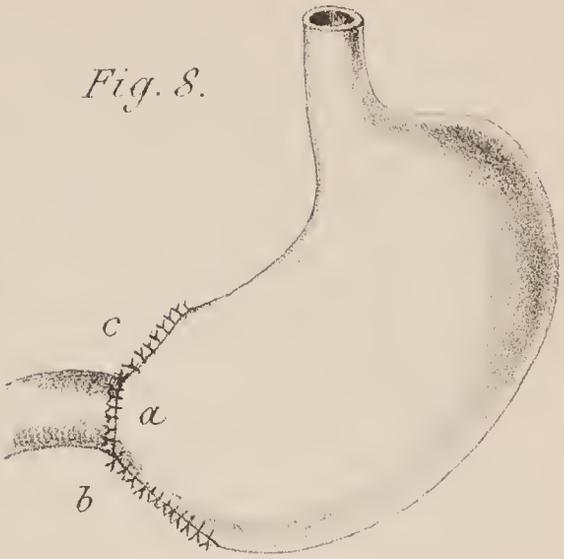


Fig. 9.

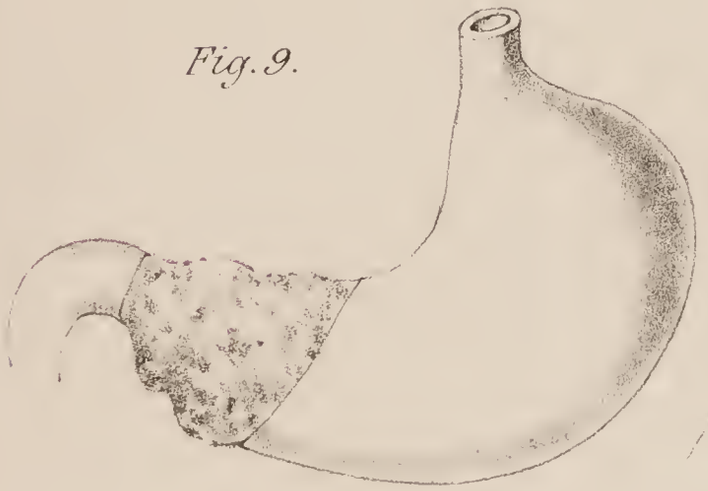


Fig 10.

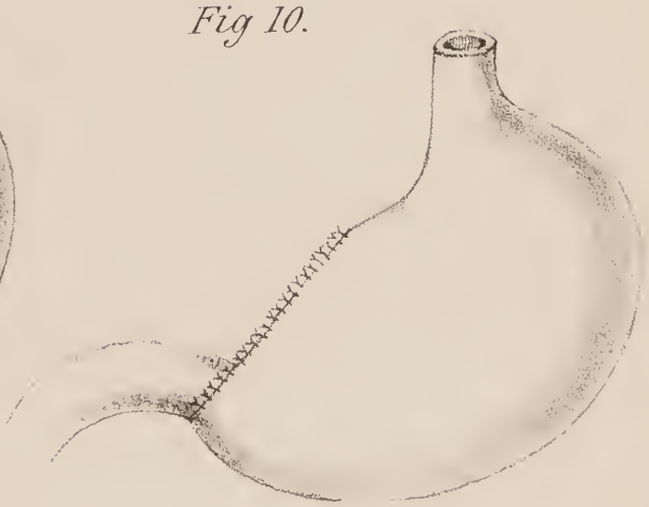
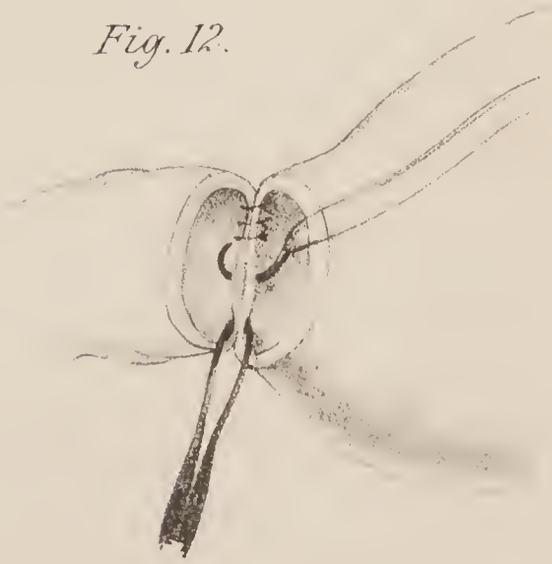


Fig. 11.

Fig. 12.



F Huth, Lith.r Edin.r

Mr Mc Ardle on resection of the Pylorus.

pouch exist such as the one depicted in Fig. 6. If the cancer engages the greater curvature, an oblique section, leaving the most prominent part of the stomach at the lesser curve and applying the duodenum there, will be admissible. The materials used are carbolised silk (Czerny, Billroth) and catgut (Rydygier). Whichever substance we use, great care must be taken to avoid too tight an application of the sutures, as in many of the recorded cases they have rapidly ulcerated through and set up peritonitis. A continuous suture should not be applied, as sloughing of the wound-border has followed its use. On the whole, the double suture recommended by Czerny seems best, the deep or mucous stitches for the posterior wall being applied first, and from the inside, as depicted in Fig. 12, then along the anterior wall, the second row being placed somewhat further apart. In the narrowing down of the gastric opening to the size of the duodenal, and in applying the viscera together, at least fifty sutures will be necessary.

It is needless to discuss the remaining steps of the operation. I have indicated the methods which seem to hasten it, I have shown the cases unsuited for it, and I conclude by saying that if—before the steps of the operation are well understood and before the conditions which indicate it are fully known—47 per cent. of cancerous and from 70 to 80 per cent. of non-cancerous succeed, what may we not expect when we are fully aware of the conditions under which the operation is likely to prove successful, and when every step is conducted with precision. If the cases be selected, and if the details be carried out with rapidity and care, I believe the operation will yet rank as one of the greatest surgical triumphs of this or any other age.

ART. XXVI.—*A Year on the Belooch and Afghan Frontier.* By P. H. FOX, F.R.C.S.I., L.K.Q.C.P.; Surgeon, Army Medical Staff.

(*Concluded from page 441.*)

Diseases of the Liver; (a) Hepatitis.—Diseases of the liver are very common in Quetta. Congestion and enlargement occur (as we have seen) as a sequel to intermittent fever. Jaundice, in various degrees of severity, occurs, usually as the result of exposure to cold; it, in the vast majority of cases, preeedes hepatitis. Hepatitis is characterised by pain in the hepatic region, which pain shoots to the tip of the right shoulder. There is also tender-

ness on pressure, as well as some enlargement of the organ. The bowels are irregular, and there is slight (usually) fever. The patient is restless and irritable, his tongue is coated, and he suffers from loss of sleep.

Case I.—Bombadier W. W., aged thirty, was admitted to the Station Hospital, Quetta, August 16th, 1884, suffering from hepatitis. During the last two years he had several attacks of this disease. The liver is now enlarged and painful; appetite bad; temperature normal; habitually costive. Treatment, chloride of ammonium and purgatives.

August 18th.—Still complains of pain and tenderness in the hepatic region; temperature normal. Ordered half-grain doses of ipecac. every fourth hour.

19th.—Pain continues. Dry cupping ordered.

23rd.—Pain still severe. Ordered a blister to be applied.

28th.—Pain still present; no fever; walks with difficulty.

September 3rd.—Tongue coated; liver still tender; pulse, 80; temperature normal; chloride of ammonium, ipecac., and taraxacum, continued.

7th.—Pain ceased; pulse, 72; temperature normal.

This man made a good recovery, and was discharged to duty on September 10th.

The great majority of cases of hepatitis terminate in resolution. Some few, however, run on to abscess. Many are complicated with dysentery.

(*b*) *Abscess of the Liver.*—Abscess of the liver is characterised by pain and tenderness in the hepatic region, well-marked fever, inability to lie on the right side, and fluctuation. In some cases it is the result of hepatitis, but in the vast majority it occurs as an accompaniment, if not a sequel to dysentery. Great emaciation and severe hectic fever always accompany the disease. It is very fatal. In order to illustrate the nature of the disease I will give a brief sketch of two or three cases:—

Case I.—Private G. M., aged twenty-six, was admitted to the Station Hospital, Quetta, on June 26th, 1884, with enlargement of the liver and symptoms of abscess. Puncture was made with an aspirator-trocar on July 21st; but no pus was found. The temperature rises every night to 100° or 101° F. He is now weak, pale, and anæmic; liver enlarged and tender; pain greatest in front, and extends thence to the right shoulder. Ordered perchloride of iron and nourishing and stimulant diet.

August 16th.—Temperature rises daily to 101° in the evening, but is normal in the morning. He is much thinner and weaker; liver very tender in front.

23rd.—Has suffered from diarrhœa for the last three days. Ordered chlorodyne, kino, and ipecac.

25th.—The diarrhœa has ceased; patient otherwise much the same.

September 3rd.—Pulse, 108; morning temperature, normal; evening temperature, 99·8°; bowels moved four times; pain extends from an inch below the false ribs to the top of the right shoulder; crepitus, dulness, and great tenderness at base of right lung. Proposed aspiration; but patient was unwilling to undergo the operation. Ordered side to be painted with iodine.

5th.—Diarrhœa returned. Ordered catechu and opium.

7th.—Fluctuation and great tenderness in the interspace between the eighth and ninth ribs; abscess pointing backwards in that direction; some diarrhœa still present.

11th.—Patient feels stronger; no diarrhœa; cannot lie on right side.

13th.—Great pain in right side; slept very badly. Ordered morphin; poultices continued.

19th.—Pain localised, and very severe. Poultices and extract of belladonna applied externally; morphin given internally.

27th.—Feet swollen.

This case went from bad to worse, and the patient died from exhaustion on October 10th. The *post mortem* revealed an enormous abscess of the liver, which had completely destroyed the right lobe. The right lung was inflamed; the abscess pointed backwards, and had penetrated the diaphragm. A trocar passed from behind through the interspace of eighth and ninth ribs would have hit off the abscess. However, the first attempt at aspiration having failed, the patient was very reluctant to have any further interference; and at the time the exact site of the abscess was made out the patient was too low to undergo any operation. There was slight ulceration of the large intestine.

Case II.—Captain A., aged thirty—a very athletic man, and fond of polo, foot-ball, cricket, and athletic sports—got an attack of dysentery in August, 1884. This yielded to treatment, and in September he went on Zhob Valley expedition. Well-marked symptoms of abscess of the liver set in on the march, and he was obliged to return to Quetta. I was now placed in charge of the case. There was great hectic; the temperature, as a rule, was normal in the morning; in the evening it went up to 101° or 102°, and then, after profuse sweating, it fell to normal or sub-normal. There was some diarrhœa, great emaciation, pain and tenderness in the hepatic region, and a round, fluctuating tumour was apparent beneath the ensiform cartilage. Poultices were applied, and sleeping draughts were given at night; the diarrhœa was controlled by astringents, and the patient was allowed a stimulating and nutritious diet, and, as soon as his consent was obtained, aspiration was employed. I passed the needle

of the aspirator into the fluctuating tumour just mentioned, and immediately found pus; about 38 ozs. of matter were drawn off.

A few hours after the operation he complained of intense pains in the liver, which were no doubt due to the adhesions being put on the stretch. These pains, which radiated from the liver, were relieved by hypodermic injections of morphin. Next day profuse diarrhœa came on, and a great quantity of pus was passed by the bowel. The most powerful astringents could not arrest this diarrhœa. He gradually sank, and died from exhaustion five days after the operation. There was no *post mortem* made.

The prognosis in abscess of the liver is always unfavourable. I have never known a case of abscess of the liver, whether multiple or otherwise, occurring after bad dysentery, recover. In fact, so well is the fatal nature of this disease known amongst the troops in Quetta, that I have heard patients over and over again declare, when they knew the nature of their disease to be hepatic abscess, that they might as well blow their brains out. Early aspiration and the successful removal of the pus is the only sound treatment that can be employed. If the operation be delayed until emaciation and exhausting hectic come on, then aspiration, as a rule, will be unsuccessful; and in cases of multiple abscesses occurring after dysentery, for an obvious reason aspiration is not generally attended with good results. However, the operation can do no harm, and, in my opinion, it should be tried in every case. One golden rule should be observed. It is this—Whenever and wherever pus collects, its early removal should be the first great object of the surgeon.

Pneumonia.—During winter and spring inflammation of the lungs is a very common and fatal disease in Quetta. The natives appear to suffer more from the disease than Europeans. It is the result of insufficient clothing and exposure in cold and rain. The great majority are cases of double pneumonia, the basis of both lungs being attacked. Fever, rust-coloured sputa, fine crepitus and dulness on percussion, are symptoms observed in every case. Bad cases prove fatal on the eighth or tenth day. I give a few examples :—

Case I.—Gunner M. MacM., aged thirty-one years, was admitted to the Station Hospital, Quetta, Jan. 8th, 1885. He complaimed of oppression in breathing and pain in the chest. On examination fine crepitation was easily detected at the base of each lung. Sputa viscid, rust-coloured, and bloody; pulse, 130; temp., 102°; respirations, 50. A peculiar blush on

both his cheeks; countenance very anxious; tongue coated. Ordered eight ounces brandy, beef-tea, jacket poultices, and a mixture containing antimony, $\frac{1}{8}$ gr. every fourth hour.

Jan. 11th.—Patient had a very restless night. Delirium present. Pulse, 128; temp., 103°; respirations, 42. Tongue furred; well-marked hepatisation of lungs present. Passed a motion under him last night. Ordered wet cupping, and previous treatment to be continued.

12th.—Patient slept badly; very delirious. Pulse, 152, weak and compressible; temp., 100°; respirations, 45. Brandy, beef-tea, jacket poultices, and stimulants continued; antimony omitted.

13th.—Low muttering delirium present, face livid. Pulse 150, very weak; temp., 101°; respirations, 72. Profuse diarrhœa present. Ordered a draught of aromatic sulphuric acid, and eight ounces of port wine in addition to the brandy; carbonate of ammonia mixture and diffusible stimulants.

14th.—Patient died at four o'clock this morning. *Post mortem* revealed purulent infiltration of the bases of the lungs. They sank in water. The other organs were healthy.

Case II.—Gunner J. B., aged thirty years, was admitted to the Station Hospital, Quetta, Jan. 12th, 1885. He complained of pain in the chest and fever. On examination fine crepitus was detected at the base of right lung. Pulse, 120; temp., 102°; respirations, 40. Ordered jacket poultices, antimonial mixture, and eight ounces of port wine daily.

Jan. 14th.—Crepitus redux present. No change in the treatment.

This man became convalescent on Jan. 16th, but on Jan. 29th he got an attack of sub-acute cystitis, characterised by heat, pain, and irritability of the bladder. The urine was examined. It contained mucus and epithelial cells; no albumen. Ordered the following:—

℞.—Potas. liquoris, ʒ i.
Tinct. buchu, ʒ ss.
Tinct. belladonnæ, ♏ xx.
Aquæ, ad., ʒ vi.

M.—A tablespoonful every fourth hour.

He was better on January 29th, and was discharged to duty on January 31st.

Case III.—Gunner D. J., aged thirty years, was admitted to hospital Feb. 17th, 1885, about midnight, in an almost collapsed state. It seems that for the last three days he had been drinking hard, and exposed himself by sleeping on the ground in the open. Hot-water baths and diffusible stimulants brought the pulse to the wrist. He now complained of severe pain in the right side, and on examination I found fine crepitation at the base of the right lung, which was dull on percussion. Pulse, 120;

temp., 102°; respirations, 45. Sputa viscid and rust-coloured. Ordered a saline aperient, and jacket poultices to the chest.

Feb. 18th.—Ordered $\frac{1}{16}$ gr. of tartar emetic every fourth hour; four ounces of port and four of brandy daily.

20th.—Patient had a very restless night. Sputa are bloodstained, and the inflammation has extended to the base of the other (left) lung. Fine crepitus is now present at the bases of both lungs. Pulse, 133; temp., 100°; respirations, 55. Ordered five minim doses of turpentine thrice daily, in addition to the other treatment; also turpentine fomentations in addition to the jacket poultices.

23rd.—Lungs have commenced to clear up. Well-marked crepitus redux present at bases of lungs. Pulse, 120; temp., 100°; respirations, 40.

24th.—Patient had a good night; respirations, pulse, and temperature, still the same as yesterday.

March 1st.—Much improved. Pulse, 96; temp., 99°; respirations, 20. Expectoration changed in character from viscid rust-coloured to yellow mucoid. Medicine changed to ammonia carbonate.

6th.—Patient now convalescent. Temp. normal.

He was discharged to duty on March 13th.

Case IV.—Private W. H. R., aged twenty-eight years, was admitted to hospital Nov. 15th, 1884. When I saw him he lay on his right side coiled up in bed. His breathing was very rapid, and he moaned a good deal. He complained of pain in the left side. The base of the left lung was dull, and fine crepitation and a friction sound were detected. There was also dulness and crepitus at the base of the right lung. Tongue fissured; some delirium present. Ordered jacket poultices and antimony. Pulse, 132; temp., 102·8°.

Nov. 17th.—Condition very critical. Pulse, 120; temp., 100°; respirations, 50. No indication of resolution; very delirious, and rather violent. Keeps trying to get out of bed; refuses to take his medicine.

19th.—Patient a little better. Chloral, grs. 20, produced good sleep last night. Left lung clearing up. Pulse, 130; temp., 100°; respirations, 48. Less delirious. Ordered a strong liniment of iodine to be applied locally in addition. Beef-tea and six ounces brandy allowed daily.

20th.—Patient again very restless and trying to leave his bed. Respirations, 60; temp., 101°; pulse, 120. Large crepitation all over left lung, and fine crepitus at base of right. Ordered a draught of chloral. No other change in the treatment.

22nd.—Patient a great deal better. Respirations now only 36; pulse, 98; temp. normal. Had a very good night; tongue moist; fissures not so deep; dulness disappearing; air penetrating air cells.

This man became convalescent on Nov. 26th, and was discharged to duty on Dec. 24th.

The only further remarks I wish to make about this disease is that the apex of the lung is very often attacked with pneumonic inflammation, while the base remains entirely free from the disease. I have the notes of numerous cases which illustrate this very important fact. I do not know whether pneumonic inflammation of the apex of the lung is common in England, but it is common enough in Quetta. It usually terminates in resolution—rarely in death, except amongst natives, in whom pneumonic inflammation of the apex of the lung, resulting in death, is very common on the Afghan frontier. This may be due to the fact that they expose the top of the chest more than Europeans.

Other Diseases of the Lungs.—During the cold weather bronchial catarrh, capillary bronchitis, and laryngitis are very common. Pleuritis and phthisis pulmonalis are also prevalent. Spasmodic asthma, pure and simple, never occurs in Quetta, probably in consequence of the rarefaction and peculiar condition of the air. Laryngitis, bronchitis, and pleuritis are very similar to what one meets with in England. They are, however, rarely or never fatal in Quetta, and consequently they require no special consideration here. Consumption is prevalent, but it is much more amenable to treatment than the type met in England. I have no doubt but that this peculiarity is mainly due to the usual dry condition of the atmosphere; however, when phthisis pulmonalis is complicated with tuberculosis of the intestines, it rapidly becomes fatal—in fact, when tuberculosis occurs in Quetta it generally does attack the bowels. At all events, the tubercular lesions of the lungs are much less severe in Quetta than in England, while the tubercular state of the bowels is far more severe. Therefore it may be laid down as a rule that tuberculosis is quite as common there as in England, but the destruction of lung tissue is less marked; that of the intestines greater. In other words, the lungs are the most common site of tubercle in England, the bowels in Quetta; but at the same time it must be noted that both the lungs and bowels are affected in every case, but with unequal degrees of severity. The more tubercle deposited in the intestines the less in the lungs, and *vice versâ*. In bad and acute cases every organ contains more or less tubercle, but the lungs and intestines are the first to show the presence of tubercular disintegration—the one alternates with the other. The more diarrhœa the less cough, and *vice versâ*. I will give a case to illustrate these points:—

Private T. K., aged twenty-two years, a nailer by trade, was last admitted to the Station Hospital, Quetta, suffering from phthisis, on Sept. 27th, 1884. He spat blood, suffered from a hacking cough, and there were coarse re piration, crackling, dulness, and bronchophony at the apices of both his lungs. He also suffered from exhausting night sweats and diarrhœa. Whenever the diarrhœa ceased the cough became worse than ever, and *vice versû*. He was put on a good nutritious and stimulating diet, consisting of milk, beef-tea, eggs, port wine, and brandy, and at the same time cod-liver oil and syrup of the three phosphates were administered. The symptoms, however, continued, and he steadily lost flesh. The diarrhœa persisted, and on Nov. 11th it became profuse. Catechu, opium, and chalk mixture were given, but they had merely a transitory effect. The hectic was now very exhausting, and the emaciation extreme. He gradually sank, and died quietly from exhaustion Nov. 16th. The *post mortem* revealed an abundant deposit of miliary tubercle in the apex of each lung. There was some cheesy degeneration, and the apices were very solid, but no cavities were detected. The mesenteric glands were greatly enlarged, and the intestines contained small points of tubercular ulceration here and there through their entire length. Tubercle was also observed in the liver, spleen, and kidneys.

Other Diseases.—General debility, erysipelas, hæmorrhoids, venereal diseases, heart disease, tonsillitis, rheumatism, and numerous other diseases occur in Quetta; but as they are not more common here than elsewhere they do not properly fall within the sphere of this essay. One alone requires attention—viz., acute rheumatism. It is important, because it usually leaves some stiffness and enlargement of the joints, and, in many cases, mitral disease of the heart. It comes on suddenly, and is characterised by redness, pain, and swelling of one or more joints. The ankles are usually first attacked; then the knees; next the wrist and shoulder-joints; and finally the heart. There is always high fever, with profuse, sour perspiration. I have always treated these cases by the administration of salicin, bicarbonate of sodium, and iodide of potassium. The joints should be enveloped in cotton; flannel should be worn; and heart complications should be carefully watched. The patient should get change to India, or else the disease will most certainly recur. Succeeding attacks are sure to leave their impression on the heart, so that unless a rheumatic patient is in the first instance sent for change to India he will in the course of time have to be invalided and sent to Netley.

Sunstroke.—Sunstroke is the last disease that we may consider. It is very prevalent in the Bolan Pass and all over Sinde; it occurs

in Quetta, but it is not very prevalent. It is described in books under different names—*e.g.*, "coup de soleil," "heat apoplexy," &c. Cases are said to occur in which men suddenly fall down and expire in a few minutes from the effects of the sun, but I have never seen such a case. The manner in which I have seen the disease to occur was as follows:—Men drank ale or porter before noon or at midday. They then exposed themselves for an hour ro so in the sun, about one or two o'clock p.m. They experienced no ill effects till sunset, when they got sharp pain in the head and became very feverish. The premonitory symptoms of sunstroke having now set in, these men either went straight to hospital and reported sick, or else went to sleep in the barrack-room. In the former case, the symptoms being recognised, the stomach and bowels were immediately cleared out, and the cold water douche employed. Early treatment in this way usually saved the patients. In the latter case, the men slept on in their barrack-rooms until some of their comrades noticed their loud, snoring, and stertorous respirations. An attempt to wake them now produces an attack of convulsions, in which state they are carried to hospital, convulsed and perfectly unconscious. The teeth are clenched; the spine is arched; tonic and clonic spasms force the extremities into all sorts of positions—at one moment they are fixed, at another extended, while again they quiver and shake like a man in a fit of epilepsy; the pulse is rapid and labouring, 150 or 160; the temperature exceedingly high, 106° to 108°; the pupils contracted; the eyes fixed, staring, and injected; the respirations hissing and stertorous; and the countenance dull, livid, and suffused. The treatment to be employed in such cases must be prompt and active. The bowels must be cleared by enemata; the stomach must be emptied by the use of the stomach pump; ice must be applied to the head and spine; and the cold water douche must be perseveringly employed. Should the breathing become easier, and the convulsions cease, hopes may be entertained that consciousness will soon be restored; but should the pulse become weaker, should the stertorous respirations continue, the prognosis is very, very bad. The treatment, however, should be continued. Hypodermic injections of digitalin should now be given, and enemata of beef-tea and brandy should be thrown up the bowel (as well as administered by the stomach), and sinapisms to the nape of neck, &c., should be used. Favourable cases recover about two or three o'clock in the morning, in six or eight hours

after the seizure. Bad cases usually die about two or three o'clock p.m., in about twelve hours after the attack; they remain perfectly unconscious till death, which occurs by coma. The *post mortem* revealed intense congestion of the lungs in every case of fatal sunstroke that I have seen; and, strange to say, the brain never showed any morbid appearance which might account for the extreme violence of the nervous symptoms. As to prophylactics, avoidance of exposure in the sun and complete abstinence from alcoholic drinks during the daytime are all the precautions necessary.

Ambulance.—Four modes of conveying the sick are employed in South-Eastern Afghanistan—viz., "dandies," "doolies," "khajawahs," and bullock carts.

A "dandie" is a sort of modified stretcher. Its construction is very simple. Four bamboo sticks are united by means of iron bars. These bars have each got an iron foot about three inches in length. The platform is composed of strong canvas, which is laced to the bamboo frame by hemp cords. The dandies are about six feet long and two feet broad. They are carried in a hammock, which is suspended on a long bamboo pole. They make very good camp beds, but as there is no arrangement for keeping the sun off, they cannot be recommended for general use. However, they are light and cheap, and for night use they answer very well.

A "doolie" differs from the above, inasmuch as its frame is entirely composed of ash. Its feet are wooden, and it has got a wooden support at either end for the long bamboo pole by which it is carried. On this bamboo pole a frame of laths rests which support a curtain. This curtain is waterproof, and it affords an admirable protection against sun and rain. It may be observed that the platform is composed of canvas, which is sewn to the frame, and not laced as in the case of the dandies. The platform of each doolie has got a hinge arrangement which can be raised to a convenient height, so as to support the head and shoulders of the patient. I do not think that a better form of stretcher for conveying the sick in a hilly country could possibly be devised. However, on the battlefield I believe it would be too cumbrous, its great disadvantage being that it requires four men to carry it.

"Khajawahs" are basket-like cots, constructed so as to fit an ordinary camel. They have a wooden frame, which rests on the camel's back like a saddle. On either side the basket-like cot is

attached. The sides of this cot are composed of a wooden frame, the interstices of which are interlaced with cord. The bottom, or platform, is also formed by cords, which are platted and interwoven after the Indian fashion of making "charpoys," or bedsteads. These little cots are about a foot and one-half broad, and five feet long. There is an aperture at one end, through which the patient's feet project when lying in the recumbent posture. Khajawahs are much too narrow and too short to be comfortable; besides, a camel's paces are very joggly and uneven, so that patients lying in these khajawahs—one on either side of the camel—are shaken up and down in a see-saw manner. They are, therefore, very unsuitable for the conveyance of bad cases—*e.g.*, fracture, &c. However, in the absence of other modes of transit, and when camels and khajawahs are available, they have been found very useful.

The ambulance, or bullock-cart, affords a most excellent mode of conveyance. It is drawn by two bullocks, yoked by the neck to a pole. The pole is firmly secured to the body of the machine, and passes between the bullocks. At the extreme end there is a cross pole, which falls over the bullocks' necks, and to which they are attached by means of a leather strap. This cart has got a pair of large strong wheels. The axle-tree is also very strong, and on it rests a pair of powerful springs which support the body of the machine. This cart is roofed with water-proof canvas, and from the roof water-proof curtains hang all round. The platform is depressed in the middle; seats are arranged front and rear. These seats are movable, so that at any moment they can be laid down and converted into beds. The entrance is from behind. The driver sits on the pole behind the bullocks. Each cart affords "lying down" accommodation for four patients, or "sitting" accommodation for eight or ten men. It will go anywhere that a siege-train or gun-carriage can go; consequently, I think, it is immensely suited for service with field artillery, as well as for station work and long marches over good roads; but, for obvious reasons, it is totally unsuited for service with mountain batteries of artillery, and in hilly countries, like South-Eastern Afghanistan, it is very little used.

Improvements in the different modes of conveying the sick.—It will be noticed that each of the four methods employed for carrying the sick in Quetta have separate and distinct advantages. The dandie is very light and handy, and is very well suited for active service with infantry in the field, or for night duty, or, in fact, for

any duty of emergency in which it is necessary to convey a patient quickly to a point where he can be promptly treated. The only improvement I would suggest for this instrument is that a hood should be attached, for the purpose of keeping the sun and rain off the patient's face. A hood could be very easily devised. A couple of hood-rods, attached to the bamboo frame at one end, and a canvas cover to pull over them, are all the appurtenances required. These would not add more than a few pounds to the weight of the stretcher, while the comfort and general utility of the instrument would be vastly increased.

A doolie is about three times the weight of the dandie. A pair of ordinary natives will carry a patient in a dandie, but a doolie requires four. This, it seems to me, is the great disadvantage of the doolie; because on the Belooch frontier labour is very expensive. However, a doolie is an admirable mode of conveying the sick and wounded, and, in a hot climate, it is invaluable. The only improvement I would suggest is, that in order to economise labour every doolie used at a station like Quetta should be mounted on a pair of small light wheels, and provided with springs. In this way a patient could be wheeled by one man from place to place just as comfortably as he could be carried by four.

With regard to the khajawahs it must be confessed that there is room for a great deal of improvement. In the first place the Indian camel is not suited for service in a hilly country like South-Eastern Afghanistan; because the climate and food disagree with him, and he quickly loses flesh and dies. In the next place a baggage camel moves very awkwardly, and, added to this, the khajawahs are too short and ill-constructed to be suitable for any except the very mildest cases of sickness. Therefore the first and most important improvement in this mode of conveyance should be the judicious selection of camels. In my own opinion the bagdadee, or Persian camel, should alone be used in South-Eastern Afghanistan. He is a short, stout, hairy camel, with good feet and an excellent constitution, and can bear any amount of cold and hardship. Of all the camels I have seen in Asia this one is undoubtedly the best suited for service in a hilly country. The fact that Indian camels will not live in Afghanistan should be forcibly impressed on our Government. Having selected a good useful camel it would be very easy to improve the khajawahs, after the pattern of the "mule-litter" presently used in England and on the Continent. If I were asked what would be the best substitutes

for camels and khajawahs, I would say mules, mule-chairs, and mule-litters. The mule is an exceedingly hardy animal. He maintains his health in any climate, and he will live and thrive on almost any fare. He requires very little attention, and for service in a hilly country he is unsurpassed for general usefulness and durability. At present he is merely employed in Quetta as a baggage animal. In mountain batteries of artillery mules are the only animals employed; and, for my own part, I think that "cacolets" and mule-litters are far superior to any other mode of transporting sick in a hilly country like the one under consideration. However, as these modes of conveyance are not yet introduced to Quetta, it is unnecessary for me to refer any further to them in this essay.

As to the bullock ambulance cart, or "gharie," as the natives call it, I think it would be greatly improved if the machine were fitted with some form of spring-bed, or spring-mattress. For transporting sick over bad roads and a hilly country such an arrangement would be most comfortable and beneficial.

ART. XXVII.—*A Case of Calculous Pyelitis, followed by Albuminoid Disease.*[a] By JOHN WILLIAM MOORE, B.A., M.D., M.Ch., Univ. Dubl.; Fellow and Registrar of the King and Queen's College of Physicians; Physician to the Meath Hospital, and formerly Senior Physician to Cork-street Fever Hospital; Chairman of the Sub-Section of State Medicine in the Academy of Medicine in Ireland; ex-Scholar and Diplomate in State Medicine of Trinity College, Dublin.

THE following case presented so many features of clinical as well as of pathological interest, that I judged it not unworthy of consideration by the Academy of Medicine. Debarred by the rules of the Pathological Section from entering upon clinical details in a communication to it, I have resolved to lay the case before the Medical Section, as the omission of the clinical history would rob the present short paper of much of its interest. For the notes of the case I am largely indebted to my Clinical Clerk at the Meath Hospital, Mr. St. George Gray, and to Mr. Joseph Francis Mannix, the Clinical Pupil in charge of the patient.

John D., aged seventeen years, a porter by occupation, residing

[a] Read before the Medical Section of the Academy of Medicine in Ireland, on Friday, April 29, 1887.

at 84 Francis-street, Dublin, was admitted into Ward 18 of the Meath Hospital, under my care, on Thursday, March 24, 1887. He was exceedingly ill—wasted, blanched, and weak. On being questioned as to the duration of his illness, he said that his legs began to swell a fortnight previously, when also severe pain in the left groin set in. His appetite was bad, and he could not sleep on account of the pain in his left groin and hip. The bowels were free, and the motions had an offensive smell and an unhealthy appearance. There was extreme emaciation; he appeared very bloodless, with long dark eyelashes, and a generally phthisical aspect, but no cough was complained of. He was very thirsty—a symptom of diagnostic importance.

Physical examination showed the lungs to be apparently healthy. The pulse was rapid, small and variable in volume—not unlike that of mitral regurgitation. In favour of the diagnosis of this lesion, also, was the discovery of a loud, rather harsh, though blowing murmur, systolic in time, audible at the apex as well as at the left base of the heart, but particularly so on a line with, and a little inside, the left nipple. As time went on, this murmur proved very inconstant as regards intensity.

Passing from the wasted thorax, the observer was struck by the fulness of the abdominal cavity, especially in the epigastrium, which was remarkably prominent. The fulness was in part accounted for by the presence of considerable tympanites, but dulness on percussion in the flanks revealed a moderate ascites, and the right hypochondrium, the epigastrium, and the umbilical region, were all occupied by a vastly enlarged liver, firm—even hard to the feel, perfectly smooth, and of uniform dimensions. It was easy to get the fingers under its rounded lower margin, and to map out the right and left lobes and the interlobular notch. The first touch of the liver suggested the probable existence of albuminoid change in the organ. At the same time, it was ascertained that the spleen was certainly not to any extent enlarged. The urine, however, was found to be highly albuminous, showing on microscopical examination a few hyaline tube-casts, but *no pus corpuscles* or blood-cells. It was acid in reaction, and its specific gravity was only 1010. There was moderate anasarca of the lower extremities, and the left leg was flexed, as in hip-joint disease—vital ankylosis.

The diagnosis lay between mitral regurgitation, with passive congestion of the liver and consecutive chronic nephritis, on the

one hand, and albuminoid disease of the liver, kidneys, and intestines on the other.

As there was no apparent suppurative or syphilitic history to account for the latter disease, a provisional diagnosis of mitral regurgitation was made. The patient was accordingly put on a mixture containing quinine, digitalis and nux vomica, and "Potus Imperialis" was prescribed to allay thirst. The liver apparently lessened somewhat in size after a few days.

On April 2 there was a sudden and marked increase of diarrhœa of a very unhealthy, offensive kind. The stools were not examined for pus. The patient's diet was now changed—arrowroot, rice, and boiled milk being substituted for beef-tea. A mixture of tincture of perchloride of iron, glycerine, and chloroform water was also given, instead of the former combination.

On April 8, John D. seemed better, had more appetite, and even asked for "meat," which was ordered for him at his urgent request.

On April 12 the diarrhœa once more became very bad, and the lad's days were evidently numbered. Aromatic chalk powder, gum acacia, catechu, and cinnamon water, were given in draughts, but without checking the diarrhœa. Stimulants also failed to relieve, and he gradually sank, dying at 6 30 a.m. of Saturday, April 16. For several days before his death it was quite evident that the malady was not valvular disease of the heart, but albuminoid disease of an unexplained origin, affecting the liver, kidneys, and intestines. Adopting this view finally and absolutely, I pronounced the cardiac murmur to be of hæmic, rather than of organic origin.

A careful autopsy was made five hours after death by Dr. James Craig, one of the Assistant Physicians to the Hospital, and Mr. Gray, Clinical Clerk. The thoracic and abdominal cavities only were examined.

The *lungs* were practically healthy. The heart was small, weighing $5\frac{1}{2}$ ounces. The usual white spot on the pericardium was very distinct, and there were traces elsewhere of past slight inflammatory action. Both ventricles and auricles contained blood-clots, evidently formed at the moment of death. The endocardium was strikingly pale and bloodless, but otherwise healthy. There was no valvular roughening—both the mitral and the aortic valves being quite normal, as was also the aorta, with the exception of two or three specks of atheroma.

The *liver* was greatly, yet uniformly, enlarged. It weighed 7 lbs., was very firm and hard, and yielded a pink coloration with

aniline blue. The *pancreas* and *spleen* were inseparably welded together by old adhesions—they weighed jointly 13½ ozs. The spleen was slightly congested—its capsule was thickened and presented appearances of former perisplenitis. It showed the characteristics of the "sago-spleen" of albuminoid disease. The pancreas was firm, almost cartilaginous, and the neighbouring glands were enlarged.

But the interest attaching to the examination attained its climax when the *kidneys* and their environs were reached. The left kidney, or what remained of it, was embedded in a mass of dense, cartilaginous-looking connective tissue. On cutting through this, the organ itself was found almost entirely destroyed, converted into a multilocular cyst with intervening bands of chondroid connective tissue. The cysts contained a horribly fœtid urino-purulent fluid, and branching calculi were found in some of them. The pelvis of this kidney was obliterated, as the result of old-standing calculous pyelitis, and the ureter also was thickened and widely dilated down to a point about 2½ inches above its entrance into the bladder, where it was completely occluded by a smooth oval calculus. This was of a bluish black colour (from deposition upon it of a sulphide), so resembling a piece of limestone rounded by the action of the sea. Passing downwards from the *tunica adiposa* and invading the sheath of the left psoas muscle, a fœtid perinephritic abscess had tunnelled, so causing the pain and stiffness in the left hip-joint. The presumption is that during the closing weeks of the patient's life this abscess had partly evacuated itself by the bowel, but a careful examination with a catheter failed to discover any opening—valvular or otherwise—into the intestine. The absence of pus in the urine was satisfactorily explained by the complete occlusion of the left ureter, as above described. The left kidney and its surrounding connective tissue weighed 6 ozs., but the right kidney weighed more than twice as much—14½ ozs. It had evidently undergone compensatory hypertrophy to a very marked extent; but in time its fate also overtook it, and at the moment of death it was the seat of albuminoid disease, only in a less degree to the liver.

My Clinical Clerk, Mr. St. George Gray, made at my request a careful histological examination of the various organs which were principally engaged. The staining solutions used in the investigation were aniline violet and lithium carmine. His sections of the liver showed extensive albuminoid change, chiefly affecting the

intermediate zone of the lobules. The outer zone, on the contrary, was the seat of a fatty deposit. Sections of the large intestine, stained with aniline violet, showed a pink coloration of the edge of the mucous membrane, due to the presence of albuminoid material. There were in the pancreas only slight traces of this substance, but the connective tissue of the organ was apparently increased in amount. The spleen was extensively invaded by the albuminoid material, and its capsule was much thickened. The left kidney was converted almost wholly into fibrous tissue, but still showed traces of renal structure, which were in places the seat of albuminoid change. The uriniferous tubes which remained were in many instances widely dilated. The right kidney presented the albuminoid reaction with aniline violet to a very great extent, particularly in the papillary portion and as regards the Malpighian corpuscles and the straight tubules. Many of the uriniferous tubes were plugged with hyaline casts.

ANTISEPTICS.

Lepine (*Rev. de Med.*, 9) finds that by combining certain antiseptics he gets better results than from the use of any of the single antiseptics which enter into the combination. He uses a watery solution containing:—

Corrosive sublimate	1 : 100,000
Salicylic acid	1 : 1,000
Carbolic acid	1 : 1,000
Benzoic acid	1 : 2,000
Chloride of lime	1 : 20,000
Bromine	1 : 10,000
Quinine hydrobromate	1 : 500
Chloroform	1 : 500

He asserts the antiseptic properties of the mixture to be greater than solution of the individual antiseptics of proportionately equivalent strength. He also asserts that the irritating and caustic properties possessed by several of the chemicals is lessened by the mixing.—*Medical Chronicle.*

ARMY MEDICAL STAFF.

The Director-General, in an official communication, dated "Medical Department, War Office, May 9th, 1887," has informed us that no Examination for Commissions in the Medical Staff of the Army will be held in August next.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

SOME AMERICAN PERIODICALS.

1. *Transactions of the American Surgical Association.* Vol. IV. Edited by J. Ewing Mears, M.D., Recorder of the Association. Philadelphia. 1886. 8vo. Pp. 343.
2. *Medical Communications of the Massachusetts Medical Society.* Vol. XIII., No. 5. Boston. 1886. 8vo. Pp. 141.
3. *Transactions of the Medical and Chirurgical Faculty of the State of Maryland.* Eighty-eighth Annual Session, held at Baltimore, Md. April, 1886. 8vo. Pp. 254.
4. *St. Louis Courier of Medicine.* Vol. XVI., No. 3. September, 1886. Pp. 96.
5. *Progress.* Vol. I., No. 3. September, 1886. Louisville, Ky. Pp. 50.
6. *The Medical Herald.* Vol. VIII., No. 89. September, 1886. Louisville, Ky. Pp. 56.
7. *The American Practitioner and News.* Vol. II. New Series. No. 19. Bi-weekly. September 18, 1886. Louisville, Ky. Pp. 32.
8. *The Western Medical Reporter.* Vol. VIII., No. 9. September, 1886. Chicago. Pp. 40.
9. *El Monitor Médico, Organo de los Intereses Cientificos y Profesionales del Cuerpo Medico.* Publicado bajo la proteccion de la Academia Libre de Medicina di Lima.

1. This fourth annual volume, published by the American Surgical Association, is smaller by some fifty pages than the third, which we noticed last year; but its contents exhibit no deterioration. The President's Address treats of "The Union of Nerves of Different Function considered in its Pathological and Surgical Relations." The questions discussed—questions of practical importance—are, Whether nerves possess afferent or efferent qualities

intrinsically or accidentally? Is a nerve-trunk simply a conductor of a form of force, the machinery at either end determining the effect? On the answers "depends the possibility of satisfactory results in the section and physiological reunion of divided compound nerves, and the grafting of one compound nerve upon another." Two cases of nerve-grafting in the human subject, detailed by the President (Dr. Gunn), favour the conclusion "that the function of a given nerve depends entirely upon the machinery at its ends, and not upon any intrinsic quality." Dr. Johnston, of Maryland, contributes a paper on "Diagnostitial Laparotomy." He begins the history of abdominal section at the very beginning. Adam was the first subject. "Laparotomy, ancient as our race, aided by anæsthesia, set free in Eve the incarnation of human maternity." The important case of Semele is cited, and one not so well known to the profession, in which "it was likewise practised, under the nepenthe of Death, upon the body of Coronis by repentant Apollo, and Æsculapius lived." The discussion on this paper, and indeed those on all the papers, are given in full and add greatly to the value of the communications. "A Consideration of the Bacteria of Surgical Diseases," by Dr. Ernst, Demonstrator of Bacteriology in Harvard, leads to the conclusions "that no form of the suppurative process is unattended by bacteria;" that the same organism may produce very different clinical results—all, however, inflammatory and suppurative processes—the differences depending on "the amount of infectious material received into the system, the locality or lesion by which it gains access, and also on variations in individual condition." Dr. J. S. Billings, U.S.A., contributed some most valuable remarks on changes of form in minute organisms to the discussion which followed. While nutrient medium and temperature remain unchanged there will be no change of form in successive generations; but—

"The varieties of media which have been tried have not yet been sufficiently numerous. We know, in regard to some other forms of organisms, not pathogenic, that very small differences in the chemical constitution of the nutrient medium may produce a marked difference in the forms. Certain organisms will grow only in a fluid in which a minute quantity of zinc is present, so minute as to be scarcely appreciable. Another form of micro-organism will flourish only in the presence of tannic acid. If we go to the lower fungi we find the most curious restrictions to particular forms of media, so curious that it is impossible not to believe that some peculiarities in form are dependent upon a

peculiarity in the media. One form of fungus is found only on old leather, another only on dead cows' horns, a third only in the seventeen-year locust. Out of a thousand species of minute fungi found in this vicinity which I have examined, some are strictly localised to one particular form of medium, and that form a very rare one. The probabilities are in favour of the view that there can be a gradual change in the form of these micro-organisms by a change in the chemical composition of the medium and of the temperature to which they are subjected."—P. 86.

The "Surgery of the Pancreas," by Dr. N. Senn, of Milwaukee, occupies 134 pages. We should not have thought it possible that this unobtrusive little viscus could have had so much written about its surgery alone. How it has risen in the world since Paley might have supposed it to be, like the spleen, a pad to keep its more important neighbours tightly in their places! Dr. Keen, of Philadelphia, reports a successful case of "Stretching of the Facial Nerve" for facial spasm, and gives a summary of 20 previous cases, with various results, more or less favourable. Dr. Roswell Park, of Buffalo, describes and figures a tracheotomy tube which he considers to be an improvement on that of Dr. Nairn, "of Ireland," suggested in our pages.

2. The "Medical Communications" of the Massachusetts Medical Society include seven articles, besides the President's—Dr. Hodges—Discourse, delivered on the 9th of last June, on "Undercurrents of Modern Medicine." In this address we find some wise words of caution against the overtraining of nurses as nurses, as interfering with the practical training of students. A superior class of young women takes to nursing now-a-days, and a thorough education, not confined to nursing, is given to them in training institutions. "They are taught how to observe symptoms, count pulses, take the temperature, judge of doses, if not of drugs, and to prepare systematic written reports of cases." Students are apt to leave to such trained nurses duties which they should perform themselves, and dependence on nurses for information about their patients "blunts the young practitioner's own observation, lessens his attention to particulars, and deprives him of the experience and the education which come by doing things for one's self." Again, "practical experience leads many to the conclusion that as a nurse advances in special knowledge, she proportionately retrogrades in the efficient discharge of the minor duties and drudgery, which, after all, are the chief requirements of her occupation." On the

subject of specialism, too, Dr. Hodges has some good remarks, and he gives an amusing illustration of the interdependence of parts and functions in the body, and of the necessity for specialists being something more than specialists. He cites, "absolutely at random," from the autopsy book of the Massachusetts General Hospital, the following *post-mortem* diagnosis:—"Chronic pneumonia; suppurative pyelitis; chronic perimetritis; hæmatoma of ovary; ischio-rectal abscess, with perinæal fistula; chronic typhlitis, with pseudo-polypi; gangrenous ulceration of vermiform appendix; granular degeneration of liver and kidney." "The patient with this appalling pathological conglomerate as his record" (in Ireland, by inference from internal evidence, we should have said "*her* record") "was one who, if alive, would have sought the advice of a specialist in diseases of the chest, and none other." We cannot leave this "discourse" without quoting an anecdote showing how deeply the belief in "germs" has penetrated, and also, perhaps, how familiarity with them has bred contempt:—"A cow-boy in Arizona was recently shot dead in the saddle for the insult implied in calling his partner 'a d——d microbe.'" The second article, by Dr. Doggett, treats of a subject which is of great and growing importance among ourselves—the Abuse of Medical Charity. In Boston a little less than one-fourth of the population receives gratuitous medical treatment; in London and New York city more than one-fourth; in Philadelphia one-fifth; in Liverpool more than one-half of the inhabitants are relieved gratuitously by medical institutions. Investigations into the circumstances of applicants made in three New York dispensaries showed that something over 50 per cent. were fit subjects for medical charity. The evil is obvious enough, not so the remedy. The author, in working a dispensary district in Boston, succeeded in eliminating undeserving cases to a very considerable extent by careful inquiry into circumstances, refusing aid to the unworthy, and noting the families found to be unfit for gratuitous advice. More time was available for examination of deserving cases, and the number of deserving applicants increased.

3. The annual volume of the Maryland Medico-Chirurgical Faculty for 1886 contains addresses by the President (Dr. Quinan) and Colonel G. E. Waring, C.E., with reports by six Sections, comprising seventeen papers, only one of which is contributed by the Section of Materia Medica and Therapeutics. We wish to

notice specially a short supplemental report from the Psychological Section, by Dr. John S. Conrad, showing "the neglect of study of insanity by the medical profession"—*i.e.*, of course, in the United States. In these kingdoms, no doubt, we do things better. Of 84 schools teaching orthodox medicine, only 14 include insanity in their curricula; 24, nervous diseases; and 40, medical jurisprudence. Of 2,841 students who graduated in these schools in 1885–86, 2,140 had received no instruction in mental diseases. The subject is taught in only two colleges in the Southern States—Maryland and Tennessee. In California, which contains a greater number of insane persons than any other State, every medical school, regular or irregular, teaches it.

4. The *St. Louis Courier of Medicine* is a monthly journal, now in the ninth year of its useful existence. We are glad to see that "editorials" are not found to be "incompatibles" in a monthly; and 9 pages out of 96 are devoted to leaders. A large proportion of the number is taken up with the proceedings of three St. Louis Societies, and of the American Ophthalmological and Otological Societies.

5, 6, 7. Kentucky used to be playfully spoken of as the Bœotia of the United States. That Louisville, a town of 63,000 inhabitants, should support three medical periodicals, while all Ireland maintains but one, is evidence that the old jests have ceased to be applicable. *Progress*, a monthly magazine, is in its infancy, having been born in July, 1886. If the standard reached in the number now before us is maintained (with a little more attention to correction of proofs), success will be deserved. The *Medical Herald* is also a monthly, and is in its eighth year. From this number (89) we learn that "by a decree of the Roman Inquisition, dated May 19, 1886, and confirmed by the Pope, Catholics are forbidden to join cremation societies, or to order their own or the bodies of others to be cremated." His Holiness, in confirming the decree, condemns the "detestable abuse of cremating human bodies." To pass from grave to gay, we note an extract from the *Archives of Pediatrics*:—"When a great ruler dies in Europe, someone calls in his ear three times. Once is enough in Kentucky. A friend steps reverently to the couch of the deceased and whispers—not necessarily loud—'Let's take a drink.' If he makes no reply, then he is dead beyond peradventure, and the funeral is proceeded

with." The *American Practitioner and News* is issued every fortnight. The contents of No. 19 are varied and interesting—some of them amusing. The following extract professes to be taken, not from a comic paper, but from the *Hahnemannian Monthly*:—"Another mental condition characterising anacardium is a propensity to swear. Now, do not suppose that I recommend anacardium for the cure of profanity, when it exists as a result of low morals. Far from it. Where, however, the propensity to swear comes as a result of mental disease, anacardium may do noble work. I once treated a minister who exhibited a remarkable *penchant* for profanity. Try as hard as he would he could not help it. Anacardium made a complete cure in his case. Another remedy, producing a disposition to swear, is *nitric acid*; but I have never seen it do any good in these cases, excepting after the abuse of mercury."

8. The *Western Medical Reporter* is a Chicago monthly, offering 40 well-printed octavo pages for one dollar yearly. Indeed the cheapness of all these northern periodicals is as amazing as their abundance.

9. The *Monitor Médico* is published twice a month at Lima. It is the organ of the Free Academy of Medicine, and contains the proceedings of that body, which is slowly recovering from the effects of the recent war. The journal is in its second year.

The Revolution in Medicine; being the Seventh Hahnemannian Oration. Delivered October 5th, 1886, *at the London Homœopathic Hospital.* By JOHN H. CLARKE, M.D.; Physician to the London Homœopathic Hospital; Lecturer on Materia Medica to the L. H. H. Medical School. London: Keene and Ashwell. 1886. Pp. 88.

EVEN "request of friends" scarcely justified the printing of this "oration," and it is not of such a nature that the publishers can have hoped to further our conversion by sending us a copy. It consists mainly of some chapters of the late Dr. Ameke's "History of Homœopathy"—which we noticed some time since—evaporated to dryness; the weaker points of Hahnemann and his "system" being carefully avoided. Indeed, we infer from the following passage that it is at last conceded that Hahnemann's infinitesimal medication is a sham:—"The leaders of the allopathic section,"

we are told, "are approaching the 'Everlasting No' of prescribing—the point Hahnemann reached in 1789—for they openly declare that they have little or no faith in drugs; and when one of them succeeds a homœopathist in the care of a case of acute disease he thinks the best thing he can do is to give the patient no medicine at all." One fact in this "oration" may be new to our "allopathic professors." "After filling their books with the records of their labours in torturing dumb brutes, and endeavouring in vain to extract from these some therapeutic pabulum wherewith to allay the cravings of their famishing pupils, they are fain to present them with a dish of crumbs furtively swept from Hahnemann's floor."

The Abuse of our Medical Charities on the part of the Public and the Profession. By James Erskine, M.A., M.B.; Surgeon to the Ear Department of Anderson's College Dispensary, and late Assistant-Surgeon to the Glasgow Ear Hospital. Glasgow: Robert L. Holmes. 1886. Pp. 19.

The subject of this paper, read before a local medical society, and reprinted from the *Glasgow Medical Journal*, is one of very great importance, both to the public and to the profession; and we welcome this and other symptoms of the awakening of the latter, at least, to its importance. The supineness with which this great and growing evil—the abuse of gratuitous medical relief—is permitted to increase, unchecked by statesmen or practitioners, is to us amazing. Here and there, indeed, an isolated effort is made to put a stop to the demoralisation of the lower middle classes, and the fraud upon the struggling general practitioner which indiscriminate medical pseudo-charity involves; but hitherto the effect of such efforts has been insignificant. The following passage, from a paper of Mr. Henry C. Burdett in the *Nineteenth Century*, is quoted by Mr. Erskine, and states our case so strongly and truly that we transcribe it here:—

"It is time the medical profession endeavoured to convince the public that whereas they are as ready as ever they were to give the benefit of their skill and experience on behalf of the poor, still the time has arrived when the anomalous condition which requires them to do more public work for nothing than all the other professions put together must cease. It is time that the leading members of the profession were a little more solicitous of the trials and injustices which the poorer and

junior members suffer, who cannot help themselves, because they have neither leisure nor energy to spare to redress the wrongs which press heavily upon them. There must be a limit to the liberality of the most liberal profession in the world."

The hospital and dispensary statistics of any large city show the extent of the evil. The present paper is concerned only with Glasgow. The statistics of twelve charitable medical institutions for 1885–6 are examined, with the result of showing that "43·7 per cent. of the population of the city, taking each attendance to represent an individual," received gratuitous medical relief. The percentage is raised to 52·3 if attendances registered by the parochial boards are added in. The actual number of individuals treated was 13·7 per cent. of the population, or 17·5 per cent. with the addition indicated above. These proportions, it should be understood, are steadily increasing. Mr. Erskine discusses the remedies suggested for this growing evil, including a Royal Commission, which is in these days a panacea, but which he does not seem to think much of. "A thorough system of inquiry into the circumstances of applicants" is, as the author says, "an effectual means of preventing the abuse of medical charity. At the London Hospital judicious inquiry knocked off 50 per cent. of applicants. In Manchester it was found that 42½ per cent. of attendants at city hospitals and dispensaries could, if provident dispensaries had existed, have paid provident dispensary fees," and, after ten years' work of the Provident Society, the percentage had fallen to 13½.

New Theory and Old Practice in relation to Medicine and certain Industries; being an Analysis of Current Literature of these Subjects. By Surgeon-General C. A. Gordon, M.D., C.B.; Retired List, Army Medical Department; Honorary Physician to H. M. the Queen; in France, Officier de la Legion d'Honneur, &c., &c. London: Williams and Norgate. 1887. 8vo. Pp. 151.

Ecce iterum Crispinus! The versatile and prolific Surgeon-General Gordon is on the war-path once more. This appears to be his thirteenth literary production, and there is no reason to fear that it will be his last. It is a controversial pamphlet, devoted to the discomfiture of the modern experimental school of physiologists in general, and of M. Pasteur in particular. Its method consists in collecting from journals of all kinds, professional and

other—from our own pages down to the columns of the *Times* and even of the *Morning Post*—every opinion, whether a judgment or an *obiter dictum*, unfavourable to Dr. Gordon's *bêtes-noires*. In the first twenty-eight pages the vivisectionists are thus disposed of; and the opinion "unhesitatingly" expressed "that nothing useful can possibly be gained by such means." As to M. Pasteur, he is little better than a pretentious impostor. He has really done nothing to protect sheep from anthrax, or silk-worms from *pébrine*, or vines from phylloxera, or beer from secondary fermentation, or men from rabies. Is it not written in "New Theory and Old Practice?" We cannot but think that a veteran handler of the pen and scissors might have turned those implements to better use.

Some Remarks on the Classification and Nomenclature of Diseases. By A. Rabagliati, M.A., M.D.; Senior Surgeon, Bradford Infirmary, and Surgeon to the Children's Hospital. London: Baillière, Tindall, & Cox. 1886. 12mo. Pp. 60.

This essay is reprinted from the *Medical Press and Circular*. The thesis is "that the official classification of diseases is not orderly, that it is not exhaustive, that it is tautological, and that it abounds in cross-divisions;" and it is triumphantly maintained. "There was never anything by the wit of man so well devised" but that holes—and some large ones—could be picked in it; and if Dr. Rabagliati himself were to emit—as he is careful not to do—a system of nomenclature and classification of disease, we would undertake to detect a blot or two. Indeed, we should have little difficulty if such abominable names as "uri-chœmia" and "lacti-chœmia"—neither Greek nor Latin nor English—were adopted. The truth is that we are still half a century from the time when a system approaching perfection will be possible. The scientific basis of nomenclature is anatomical, of classification ætiological, and great as our advance in recent years has been in tracing diseases to their origins we are but groping still. Meantime some names we must have, and some classificatory grouping—if it were only for statistical purposes—to mark our progress in preventing and curing disease. As our knowledge grows, provisional systems must be modified from time to time. Accordingly, as this essay points out, the second authoritative classification is an improvement upon the first, and Dr. Rabagliati proves that the time for a new revision is at hand, and supplies some excellent suggestions in aid.

Outlines of the Pathology and Treatment of Syphilis and Allied Venereal Diseases. By Hermann Von Zeissl. London: H. K. Lewis. 1887.

The second edition of this work, revised by Maximilian Von Zeissl and translated into English by H. Raphael, M.D., of New York, is unquestionably a useful addition to the English literature of venereal diseases. The translator in his preface remarks, "A treatise on syphilis by one who has devoted his entire life to the study of this disease, and whose experience is the result of the observation and treatment of upwards of thirty thousand patients, needs little additional testimony to attest its value."

Von Zeissl clearly defines the object with which he undertook the work in the following words—"I am fully aware that the book offers little that is new, but it is not intended that it should spread any new doctrines. It claims only the modest task of presenting a comprehensible picture of venereal diseases and their treatment as briefly as possibly to the practical physician, whom time will not permit to read extensive works upon every special branch of our science."

The gap in our system of medical education in this country, caused by the closing of the Lock Hospitals against students, thus debarring them from acquiring any extensive practical knowledge of venereal diseases, especially in women, until they go abroad to practise, renders such a work as that before us indispensable to the general practitioner. Graphic as the descriptions of the various phases of primary syphilitic lesions and the subsequent syphilides are to the mind of one already familiar with their appearances, it is impossible that any description can fully convey such a picture as will supply the want of actual observation. This work cannot fail to be a valuable book of reference to the general practitioner, who may find in it a faithful account of almost every aspect in which venereal diseases present themselves. The first third of the volume is devoted to gonorrhœa, venereal catarrh, soft chancres or chancroids, and is an exhaustive treatise upon these affections, their consequences, and complications. The remaining 248 pages are upon syphilis. If they do not contain anything actually new, there is at least much to be found in them that is not generally known.

Von Zeissl discards Ricord's classification of syphilis into primary, secondary, and tertiary, and divides the progress of the

disease into two stages only, that of "moist papules or condylomata," and that of "gummatous adventitious growths."

The translator regards this classification as much more correct than that of Ricord. We cannot, however, endorse this opinion, for although it is often difficult to define where the primary stage ends and the secondary begins, and although phenomena properly belonging to the tertiary stage will sometimes appear prematurely, yet Ricord's division conveys a distinct, now well-recognised idea of the groups of lesions characteristic of each stage, whereas moist papules and condylomata may occur and recur throughout the whole course of the disease, while gummatous adventitious growths are essentially characteristic of Ricord's tertiary stage.

The theory of the unicity of syphilis is disputed, and we have no hesitation in saying that it is not a universal law, as rare instances are unquestionably met with in which the same individual has contracted the disease a second time. This von Zeissl regards as a proof of its perfect curability—a fact of which no one can have any doubt who has had an opportunity of observing any large number of persons for a long period after the disappearance of all evidence of syphilis. In many instances, even where both parents have been syphilitic, healthy children are born who never develop any evidence of hereditary disease.

It is remarkable that, comprehensive as the work is, there is little or no allusion to syphilitic affections of the rectum; yet, although comparatively rare, there is no form of syphilitic affection where an ordinary practitioner will be more in need of assistance in his diagnosis from a specialist or from reference to a text-book upon venereal diseases. For example, cases of stricture of the rectum from "*Syphilome ano-rectal*," as described by Fournier, is an important affection, difficult of recognition, yet not alluded to in this work. We hope to see another edition of the work with this deficiency supplied. We also think that, as a work which professes for its object the assistance of the busy practitioner, the index may be extended and made more complete, as there is much interesting and instructive matter which cannot be referred to by seeking it under the several headings in the index as it stands.

On the whole, with a more perfect and systematic index, the book cannot fail to be a most valuable addition to the library of anyone engaged in practice.

Method in Medical Study. By CHARLES H. MAY, M.D.; Instructor in Ophthalmology, New York Polyclinic; Clinical Assistant in the Department of Diseases of the Eye and Ear in the College of Physicians and Surgeons, New York. Pp. 8.

A REPRINT from the *New York Medical Journal*, for the benefit of Dr. May's "Quiz Classes." For those who do not know American we should explain that "quiz"—a word of undiscovered etymology—corresponds to Irish "grinder" and English "coach." The little tract is full of excellent advice, which, it is impossible to doubt, New York students will act upon. Students at the other side of the Atlantic are, if we may judge from these few pages, not unlike our own; and we know that our own young friends gladly devote ten hours of the twenty-four to "attending lectures, clinics, recitations or quizzes, and reading," and eight hours, or even more, to sleep. They will cheerfully accept Dr. May's theory that "the medical student must have recreation just as more fortunate beings," and the practice, founded thereon, of devoting "one entire day each week to recreation or rest, without any medical thoughts, and also one evening during the week." In one respect there is a striking contrast, in our favour, between the medical student of the Western world and our own. No one can say of the latter that "the first session is often neglected, and much of the time wasted in acquiring an unnecessarily deep knowledge of the city, especially if it is the student's first visit."

HYOSCIN.

HYOSCIN, which appears to be the most promising of new hypnotic agents, is not devoid of danger, and had better be given in small doses at first; for, as in the case of opiates, there may be some individual idiosyncrasy that renders the patient peculiarly sensitive to its effects. Dr. P. S. Root (*Ther. Gaz.*) found ill effects produced by the $\frac{1}{300}$ of a grain. Afterwards $\frac{1}{1200}$ of a grain produced uneasy sleep in the same patient. Probably the $\frac{1}{400}$ of a grain is the safest dose to commence with; that amount has produced well-marked symptoms in patients prescribed for by Dr. Andrews, of Detroit.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—Robert M'Donnell, M.D., F.R.S.
General Secretary—W. Thomson, M.D.

SUB-SECTION OF STATE MEDICINE.

Chairman—John William Moore, M.D.
Sub-Sectional Secretary—E. MacDowel Cosgrave, M.D.

Thursday, February 3, 1887.

Dr. J. W. Moore in the Chair.

The Present and the Future of State Medicine.

The Chairman delivered an address on the present and the future of State Medicine. [It will be found in the Number of this Journal for March, page 235.]

The Registrar-General (Dr. Grimshaw) recalled the fact that, nearly fifty years ago, the late Dr. Henry Maunsell delivered a remarkable address on political medicine in presence of the then Lord Lieutenant.

Dr. Jacob said the Chairman's address, which was calculated to raise that Sub-section to a position of considerable importance, proved that the science of sanitation was making steady progress, almost shouldering out curative medicine.

Inexpensive Clearance of Unhealthy Areas.

Sir C. A. Cameron read a paper on the clearance of an unhealthy area in Dublin through the operation of the Public Health Act, 1878, without expense to the ratepayers. [It will be found in the Number of this Journal for April, page 326.]

The Registrar-General (Dr. Grimshaw) said the operation of the Public Health Act, 1878, in effecting the clearance of unhealthy houses,

as indicated by Sir Charles Cameron, was not generally or sufficiently known, but Sir Charles had been at the same time singularly lucky in getting a number of houses unfit for habitation together, because the intervention of one or two good ones would have spoiled his scheme. Success depended on getting a lot of bad property in the same spot. Moreover, the effective operation of the Act was due to the prohibitive words being "a nuisance *or* injurious to health," instead of "*and* injurious to health." The "and" had been changed into "or," and the bill became law before the alteration was discovered. The area thus cleared might be utilised as an open space, or as a site for artisans' dwellings if the lanes were widened.

Dr. MacSwiney would prefer to have the cleared area used as an open space—a sort of lung for the thickly-populated neighbourhood.

Dr. Jacob, seeing that the clearance of three acres compulsorily under the Dublin Improvement Acts cost £27,000, or about £19 10s. a head for the families removed, thought the citizens were to be congratulated that the adversely criticised Corporation had not done more in clearing unhealthy areas, and that the plan carried out by Sir Charles Cameron, however inequitable, in effecting clearances at the people's expense rather than that of the ratepayers generally, was to be preferred. He concurred in the desirability of using the cleared space as a "lung."

Dr. E. MacDowel Cosgrave observed that the apparently large cost of the clearance, under the Dublin Improvement Acts, was considerably diminished by the revenue from the increased rating of the new buildings.

The Chairman said the lowering of the death-rate depended to a considerable extent on works of the kind being carried out, and that would prove an enormous saving in respect of taxation after the lapse of some years. The place cleared would, from its contiguity to the Adelaide Hospital, be admirably adapted as a recreation ground for the patients.

Dr. F. T. Heuston hoped Sir Charles Cameron would recommend the Corporation to give the space to the Adelaide Hospital for the purpose of a pleasure-ground, and thus save the hospital the expense of sending patients to the Convalescent Home at Stillorgan, and at length save cost to the city by diminishing the death-rate, as the Chairman had indicated.

Sir C. A. Cameron, in reply, said the Corporation could not make a gift of the site in question to the Adelaide Hospital, because it did not belong to them, as in the case of the areas cleared under the Improvement Act for artisans' dwellings, where the Corporation had paid compensation to the owners. It was, however, satisfactory that at last the Corporation had got admirable by-laws, according to which the demolished houses could not be rebuilt, except the plans were approved of by the Public Health Department. Three or four years ago, at his suggestion, the Adelaide Hospital authorities had acquired a portion of the ground. From the present would be observed the good effects of the clearances in diminishing

the death-rate; and, in his opinion, Dublin would never again suffer from terrible epidemics of typhus or probably of smallpox. It was a remarkable coincidence, pointing to the advantage of clearances, that when there was smallpox in the hospital it was also to be found in the houses at the opposite side of the street. But, as he had said, the effect of the clearances was beginning to be noticed. The death-rate for Dublin, in 1886, was the lowest on record. As to the notification of infectious disease, the dispensary doctors, eighteen in number, were already doing it voluntarily.

The Sub-section adjourned to Thursday, May 19.

PATHOLOGICAL SECTION.

President—Walter G. Smith, M.D.
Sectional Secretary—J. B. Story, M.D.

Friday, Feb. 11, 1887.

The President in the Chair.

Spindle-celled Sarcoma.

Mr. E. Hamilton exhibited the viscera of a man who had died after the removal of a recurrent spindle-celled sarcoma from the axilla. Secondary growths were found in the lungs, liver, pancreas, intestines, and the interauricular septum of the heart, of which Dr. M'Kee had prepared microscopic slides, which were shown at the meeting. Mr. Hamilton added that during the patient's life no clue was obtained to the vast disorganisation which was discovered after death to have been going on through his entire system. He had neither pulmonary trouble, cough, pain, nor symptoms of dyspepsia, and the diarrhœa was the only sign of intestinal trouble. As he sank lower and lower, however, he manifested a peculiar mental dulness.

Dr. M'Kee remarked that in sarcoma, as a general rule, the secondary growths reproduced the first very faithfully, but there was a departure from that rule here. The melanotic nature of the growth was not determined, on the examination of the first tumour by Dr. Purser, whose report was that it was a spindle-celled sarcoma. No doubt the pigment might have been derived from the axilla, which is normally rich in pigment. He (Dr. M'Kee) did not call it a melanotic sarcoma, because the pigment was really not characteristic of the growth, only portions of the tumour being pigmented. As to the source of pigment they knew absolutely nothing. It was supposed to be derived from the blood, and probably was; and an attempt had been made to show that in these tumours the pigmentation was due to the occurrence, in the small vessels, of embolisms or thrombi, which caused an effusion of the blood-colouring

matter into the surrounding tissues. It was that which directed his attention to the masses in the lungs; but there was no pigmentation of tissue around them. The questions of how the metastasis occurred, and as to the course the malignant embolus took, were interesting. It was probable that the lung was first infected through the perforation of a vein at the axilla. If a malignant embolus were swept through the right heart, and thence carried into the lung, the implication of that and the surrounding organs would be easy to understand.

Dr. Purser said no microscopic examination was made of the first large tumour which Dr. Joynt brought to the laboratory; but from the nature of it he had no doubt that it was a spindle-celled sarcoma. Subsequently Dr. Joynt brought the smaller tumour, which was completely black, and he found that it was a large-celled sarcoma, some of the cells being spindle-shaped and others round. The pigment was not in all the cells, but occurred only in some. The chief point in the case was to determine where the primary seat of the growth was, there being an enormous number of growths in different parts of the body, all of the same size. The growths in the skin might easily have become pigmented, because there was naturally a certain amount of pigment in the skin.

The President said the extensive implication of the lungs, without the manifestation of any local or external symptom, was a remarkable fact. He had a patient affected with malignant disease of the abdomen and secondary contamination of the lungs. Before death no symptom occurred to raise the slightest suspicion that the lungs were infiltrated; but after death thousands of secondary nodules were found through the lungs. Was there, in Mr. Hamilton's case, any suspicion that there was internal infiltration of the organs before the second operation was done?

Mr. Hamilton, in reply, said he did not see the first tumour. The second growth appeared six weeks after the first operation. The subcutaneous tumours were spindle-celled, and presented the same characteristics as the others. No examination was made of the man's chest, but he complained of no symptom there. He was apparently a healthy man from the country, and walked into the hospital, complaining of nothing but the great distress which the tumour gave him when his arm came down on it and rubbed it. He (Mr. Hamilton) was averse to secondary operations for malignant disease, for they seldom did any good; but in this instance he yielded to the man's urgent entreaties, because every time his arm came down on the tumour it bled and caused him a great deal of suffering.

Congenital Stricture of the Urethra in an Infant.

Dr. Macan submitted a case of congenital stricture of the orifice of the urethra, hypertrophy of the bladder, and cystic degeneration of the

kidneys. The specimen was the first of the kind he had met with, and was taken from a full-grown child in the Rotunda Hospital about a fortnight ago. The child was born alive, but shortly afterwards died. It was found to be suffering from imperforate anus. A short time previously there had been a successful operation in the hospital for imperforate anus, the obstruction in that case being found to be little more than a septum. A *post mortem* was made of the child, from which the present specimen was taken. On examining the abdomen over the pubes a large tumour was detected, reaching as far as the umbilicus, which could be moved about. From the grisly feel of it he first thought it was malignant disease of the bladder. The penis was very much distorted in shape and œdematous. On opening the tumour it was found to be the bladder, with thick, hypertrophied walls. Fœtal urine, clear and limpid in character, flowed out, and after the gush the bladder seemed to fill again, and another gush took place. He searched for some diverticulum in the bladder that might be filled with urine, but found none; but on cutting down more into the bladder he found that the fresh flows of urine came through the ureters. It was then apparent that there must be a collection of urine in the kidneys. The *post mortem* was undertaken by Dr. Horrocks, who found a great contraction in the orifice of the urethra, and the penis distended; there was also a great dilatation of the urethra. The right kidney was also swollen out into a cyst, and contained a considerable quantity of urine. The left kidney was also disorganised, but less swollen out into cysts than the right. The intestine ended in a blind sac at the lower portion of the bladder. He thought the primary source of disease was the occlusion of the orifice of the urethra. When a total occlusion of urine from such a cause occurred in the fœtus the bladder became distended, and a difficulty of labour and delivery often resulted. The accumulation of the liquor amnii during the later stages of pregnancy was a proof that that fluid was in fact the secretion from the kidneys of the fœtus. In the present case it would appear that the extra amount of work which the bladder was called on to do in consequence of the stricture caused the hypertrophy of its walls, and the fœtus must have spent a good deal of its time in making water in order to produce such hypertrophy as was seen in the specimen. That the liquor amnii was fœtal urine was looked on by some as proved, but he was not quite certain about it. The child in question presented another curious anomaly. On one side of the spinal column there was a depression of the skin with a cicatrix on the outside, and the *post mortem* showed that this was caused by a spina bifida. There was also a deformity in one of the legs.

The President said the specimen was evidence of a well-known pathological law, in accordance with which several different malformations had a tendency to be associated. Did Dr. Macan satisfy himself

that there was complete atresia, or that there was a pinhole aperture? Either would be sufficient to account for the hypertrophy of the bladder and distension of the kidneys. He did not gather from Dr. Macan whether he entirely held the opinion that liquor amnii was to be looked on as so much diluted urine, or that it was a different fluid only contaminated by the fœtal urine. The presence of urea in it was not enough to settle the question.

Professor Bennett said Dr. Macan had not mentioned what was the condition of the urachus. Urinary fistula at the umbilicus was not uncommonly met with without any other deformity; and imperforate anus also occurred independently of the other things seen in the present specimen. The most important point connected with the specimen in a surgical aspect was that of the limb deformity being associated with an indication of damage to the spinal cord. It would be interesting if an examination of the specimen could be made in order to ascertain the extent of the nervous supply to the muscles of the deformed limb, for at the present day the exact nature of the lesion known as the "club-foot," and of congenital deformity of the hip, was a vexed question. In the present specimen there was club-foot with a distinct lesion, which might involve the nerves that passed into the limb. He moved that the specimen be sent to the Committee of Reference, with a request to report thereon.

Dr. Wheeler said he had great pleasure in seconding the motion. An Italian writer, named Molinetti, gave an account of a *post mortem* case in which he found five urinary bladders. It was a pity that the intestine in the present case had not been dissected further up, in order to ascertain where the closure was. Some years ago he brought forward a case of imperforate anus with an opening in the gut at the side of a spina bifida.

Dr. Thornley Stoker said the occurrence of cystoid degeneration of the kidneys in the fœtus, though rare, was not altogether unknown. The degenerate kidney sometimes attained a considerable size, pressed up the diaphragm, and displaced the liver into the thorax. It was now a matter of considerable interest to surgeons to arrive at a conclusion as to where the bowel could be best looked for in cases of imperforate anus. The most modern plan was to perform laparotomy, or a lumbar operation, and not to attempt any procedure involving the peritoneum.

The President remarked that in some of the islands of the South Pacific nearly all the natives were afflicted with congenital phimosis, and many of them had a preputial orifice no larger than a pin's head.

Dr. Macan, in reply, said a great deal of materials for *post-mortem* examinations went to waste, he was sorry to say, in the Rotunda Hospital. Every child that died should be examined, and they ought to have their own pathological investigations there. He would hardly recommend that a child's abdomen should be opened in a case of imperforate anus. There

were cases in which the operation should obviously be a rectal one. In the present specimen the end of the gut was at the bottom of the bladder. There was no atresia—only a stricture. A very considerable quantity of the liquor amnii must have been urine, unless the child passed a very small amount of water and drank the fluid. In pregnancies the quantity of the liquor amnii varied very much. Fœtal urine seemed to be the only known source of liquor amnii, and the fact that the quantity of urea in that fluid was known to increase towards the end of pregnancy seemed to show that fœtal urine was at all events a considerable source of it.

The motion that the specimen be sent to the Committee of Reference was agreed to.

Cerebro-Spinal Meningitis.

Dr. Quinlan exhibited a fatal case of cerebro-spinal meningitis. He said P. S., aged fifty years, a cabdriver, had for the past two years been of very intemperate habits. On the 1st of January last he was driving his cab, while in a state of partial intoxication, when he fell off the box upon the road. He managed to get home, and took to his bed. Next day he complained of great and increasing numbness, and was admitted into St. Vincent's Hospital on the 6th of January. He was unable to move hand or foot; his pulse was only 44 in the minute; his temperature was under 95° F.; and the surface of his body was cold and numb. The compasses did not produce the sensation of two points unless separated over an inch and a half. He had no control over the urine and fæces, and there was priapism. He died on the 9th of January. His body was well nourished, and at the time of his death there was a yellow discoloration occupying the whole gluteal region, with the beginning of a line of separation surrounding it. The brain and spinal cord were carefully removed by Mr. Coen, the house surgeon, and exhibited general surface congestion of the pia mater, with numerous spots of circumscribed inflammation. These appearances showed pretty uniformly over the whole brain and spinal cord.

President.—Did he fall on his head?

Dr. Quinlan.—I had no means of ascertaining. I rather think he must have fallen on his head and shoulder. He was not rendered insensible, but was able to drive home without assistance. There was no injury to the spinal column, and the cord was quite safe.

President.—Did you examine the interior of it?

Dr. Quinlan.—I did not.

Aneurysm of the Abdominal Aorta.

Dr. Foot exhibited the preparation and drawings of an aneurysm of the abdominal aorta of a married woman, aged thirty-five. The aneurysm was a true one, size of a lemon, situated immediately above the origin of

the common iliacs, and had ruptured at the posterior aspect of the sac. The rupture occurred forty hours before death. About three pints of blood were extravasated into the retroperitoneal connective tissue. Up to the date of rupture there had not been a single abdominal symptom, the patient's obvious ailment being regurgitant disease of the aortic valves. Dr. Foot specially referred to the extreme rarity of aneurysm of this vessel in females, verified by *post mortem* examination.

The PRESIDENT said aneurysm of the abdominal aorta in the female was admittedly of rare occurrence. He saw a case in Baggot-street Hospital of a well-known dance pianist who died from the rupture of an aneurysm in the abdominal aorta, and the day before his death he had no symptom whatever indicating that he suffered from so serious an affection. Cases of it had been known to linger so long as twelve years from the first observance of the symptoms to the final catastrophe.

DR. QUINLAN stated that eighteen years ago, while he was Physician of the Richmond Prison, he was roused one morning at half-past three o'clock to attend a patient who had suddenly rang his bell for assistance, and declared that he was dying. He went to the man's cell and found him dead. He was a corn porter of herculean proportions, who had been sentenced to hard labour. If he had been known to be suffering from any infirmity he would have been excused the hard labour; but although he had been examined by the surgeon of the prison, who was a most careful and experienced officer, and had every temptation to make complaints, he made none, and nobody supposed that anything was wrong with him; on the contrary, he said that he was never sick in his life. On the day before his death he put in his usual three-quarters of an hour on the tread-mill. He complained of nothing till night, when he suddenly rang for assistance. On a *post mortem* an aneurysm of the abdominal aorta was found, which had burst and filled the cavity of the peritoneum with blood. It was fortunate for all in the prison that the rupture did not take place while the man was on the tread-mill.

MR. COX mentioned a case of thoracic aneurysm in a man which came under his notice in St. Vincent's Hospital. The aneurysm was between the umbilicus and the ensiform cartilage, and could be seen. The man, who came from Galway, was greatly attenuated, and had been suffering from dyspeptic trouble for a long time. There was a bruit over the aneurysm, but no cardiac bruit. There was marked evidence of atheromatous degeneration of the vessels, and the right femoral artery was smaller than the left. The man suffered from considerable pain and gastric irritability, but the pain was chiefly referable to the pylorus. He had never had syphilis, and was of temperate habits, so that the aneurysm must have been caused by a strain. The man was a stonemason. He left the hospital, and had since written to say that he was quite well.

Congenital defect in the Ventricular Septum (cordis).

Dr. Foot exhibited the heart of a man, aged twenty-one, which presented a perforation, apparently congenital, of the septum ventriculorum in the "undefended space." This passage, which was of the dimensions of a goose quill, had given rise to a murmur, systolic, transverse in direction, heard over the face of the right ventricle, and unaffected by change of posture.

The President remarked that it was singular how malformations of this sort ran in families. He knew a family of three children, all of whom had congenital disease of the heart. Two died, and the third, about two years of age, lately came under his care for laryngitis, and on examination of the chest he detected an almost musical murmur above the left clavicle and at the back of the thorax. The child's mother told him that it was very easily got out of breath, and became dusky in the face.

Mr. Cox mentioned a case of a child in which cardiac bruit was detected a fortnight after its birth. The heart moved to the right side. It continued extremely delicate, and lived to three or four years of age; was very easily put out of breath, and ultimately sunk under a slight attack of measles. He never doubted that it had congenital communication between the two ventricles. The murmur was distinctly systolic.

Dr. Foot said in his case there was no derangement of the heart but the one. The foramen ovale was quite closed, but the two coronary arteries rose behind the same valve of the aorta, and were very unequal in size.

The Section then adjourned.

CAFFEIN.

Schroeder, from experiments recently conducted by him, concludes that caffein exerts two opposite influences:—1st. It stimulates the nervous system, like strychnin, and through the vaso-motor centres causes contraction of the renal vessels, thus tending to decrease the urine flow. 2nd. It stimulates the kidney itself, and tends to greatly increase the urine flow. The contraction of the vessels may compensate partly or completely the stimulation of the secreting tissue of the kidney. Hence the real and powerful diuretic influence of caffein has remained so long hidden. Schroeder thinks the effect of caffein on the kidney is, to a certain extent, comparable to that of pilocarpin on the salivary glands and sweat secretion, but it acts directly on the renal epithelium, not through the nervous apparatus.—D. J. Leech, *Med. Chron.*, January.

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1886–87.

President—W. Whitla, M.D.
Hon. Secretary—Henry Burden, M.D., Q.U.I.

January 12, 1887.

Report upon a Case of Cleft Sternum exhibited by Dr. Scott. By Dr. Thomas Sinclair, Pathological Secretary.

The child is a female, and is now three months old. There is no other congenital defect but the imperfect sternum, the degree of the cleft in which is of rare extent, amounting to complete vertical division of the entire bone.

The sternum is not absent, as at first sight appears, for a strip of cartilage, binding the costal cartilages together, may be felt as the margin of the cleft on each side. Traced downwards, these cartilaginous edges merge in the lower costal margins, without showing any trace of an ensiform appendix. Traced upwards, these edges diverge rapidly in the situation of the manubrium, but nevertheless offer articular surfaces by their upper ends to well-formed clavicles, and, in addition, give attachment to the sternal heads of the sterno-mastoidei muscles. Inferiorly, notwithstanding the divergence of the sides of the cleft, the recti muscles remain together in the linea alba, which is perfectly formed, until a point is reached corresponding to the situation of an ensiform appendix. Here the muscles diverge to attachments on the margins of the lower part of the cleft. The angular interval between can be readily felt beneath the skin. Above this point in the middle line the integuments are much thinned, and are represented by a delicate pellicle, which bulges forward with each heart-beat, and still more by transient herniæ of the lung. This extremely thin pellicle is the only protection to these organs in the middle line, more especially to the heart. Had it not existed, the case would have been one of "ectopia cordis," the highest grade of arrested development possible in this region, from absolute non-union of the ventral laminæ of the fœtus. The chest, as a whole, is expanded from recession of the edges of the cleft—a condition that renders the mesial position of the heart more marked; in other words, the left half of the thorax moving outwards gives a new position to the apex beat on the mesial side of the usual position.

The child appears more comfortable when the viscera are gently repressed and the cleft edges approximated by the use of a pad and flannel roller. The various functions of the body are well performed.

I understand that some time ago a little fluid escaped from the thin pellicle, without other symptoms referable to heart or lung occurring; the opening, however, is now sealed.

Viewed in relation to the ossification of the sternum, and the occasional occurrence of sternal fissure opposite the third, fourth, and fifth costal cartilages, the cleft in the present case presents the following interesting features, viz.:—That it is narrowest where the sternal fissure occurs, having, in fact, the form of two triangles joined by their apices about the level of the third and fourth costal cartilages.

Viewed in relation to the functions and mechanism of respiration, the case presents the following noteworthy points:—

1. The first and second ribs are much more movable than usual, and the muscles attached to them and the clavicle—viz., scaleni and sterno-mastoidei—are much more frequently employed as inspiratory muscles; in short, the upper part of the thorax is of more than ordinary service in respiration in this child.

2. The movements of the ribs upwards in inspiration tend rather to open the cleft than to advance the representatives of the sternum. In consequence, the lateral diameter of the chest is abnormally increased, while the antero-posterior diameter gains little or nothing by the elevation of the ribs. Hence, the three measurements which increase in the inspiratory movement of a normally built thorax are almost reduced to two—that is to say, the vertical by descent of the diaphragm, and the transverse by elevation of the ribs; in fact, the movements of the ribs resemble, in this deformed child, the movements of a crab's claws, rather than the "bucket-handle" action of a perfect chest.

February 23, 1887.

Phthisis. By Alexander Harkin, M.D., F.R,C.S.

The time selected for considering the therapeutics of consumption appears to me peculiarly appropriate, as upon the very day of our meeting the Annual Report of the Urban Sanitary Authority of Belfast appeared in the daily press; and in that record of sickness and mortality the element of consumption and other chest affections had a sad pre-eminence. It seemed almost as if this scientific association had immediately responded to the call for help, and that its members had at once introspected their armoury for the most effective weapons of resistance,

their most potent arms of precision, that they might hasten to the encounter with the deadly enemy of our race; and so, in the triple exposition of the modern treatment of phthisis, the members present had presented to their view a masterly *resumé* of the disease, whether from a clinical, a climato-therapeutic, or a surgical point of view; and, doubtless, the audience had grounds for congratulation in the greater exactitude of differential diagnosis, of the symptomatology, in the exploitation of formerly so-called specifics, and the trustworthiness of one favourite remedy; but, on the other hand, had there been in presence the conscript city fathers, or a number of the "*οἱ πόλλοι*," I fear very much that their satisfaction would scarcely have equalled that of the restricted auditory then assembled.

So true it is that in the ordinary mind the sole business of a physician is to cure disease; and, although our clients do not now believe in the efficacy of philtres and alexipharmics, as in the time of Sir Thomas Browne, when "Misraim cured wounds and Pharaoh was sold for balsam," yet Medicine is by them regarded as an uncertain science when it has not for every ailment an especial remedy, and for every disorder an effective antidote.

This erroneous impression in reference to phthisis will still continue to exist until the public are led to understand that it is not an abstract entity, but a biological cataclysm, the result of long-continued contempt of the laws of health, either in the individual or his immediate progenitor, the climax of the disease rising by regular gradation from disordered function to organic change, and final, lethal disintegration.

In Dr. Cuming's dissertation we had presented to us a description of the various remedies at present most in favour, without any undue leaning to special theories or schools of thought—an endeavour in a judicial manner to award to each its special claim to utility or otherwise. He appeared to attach a great importance to the subject of nutrition, did not refer at all to the agency of revulsives, and, while generally approving of the collateral advantages of medicated inhalation, could not regard it as a specific, as the tubercular bacillus on which the reagent was supposed to operate was itself encapsuled, and beyond the reach of medicated inhalation. In this pronouncement Dr. Cuming is supported by Virchow, who some time since, in the German Reichstadt, warned the members, when referring to the discovery of the bacillus of cholera, that the question was not finally settled by its discovery, and hinted that we were no nearer the eradication of consumption with all our knowledge of tubercle bacilli.

The admission, however, of the existence of a tubercular bacillus opens up the question of contagion, and naturally leads to the consideration of the relation which exists between the microbe and the soil in which it effects its evolution and development, and the results as to

treatment claimed by the bacteriologists. Thus, in a communication to the Academy of Medicine, Paris, on 19th October last, M. le P. Cornil, under the title of "Les Lavemens Gazeux dans la Therapeutique des Maladies Respiratoires" (Phthisis Pulmonalis, Bronchorrhœa, &c., &c.), this novel method of treatment, introduced by Dr. L. Bergeron, of Lyons, was stated to have obtained most important results through the rectal injection of carbonic acid charged with medicated substances. In the words of M. Cornil, the principle involved in the action of gaseous enemata, and their rapid elimination through the lung, was formulated by Claude Bernard, who demonstrated that when we injected sulphuretted hydrogen into the rectum of the lower animals the gas was eliminated by the lungs without provoking accidents, although its introduction by ordinary inspiration led most rapidly to grave results, and even to death. Possibly, although the encapsuled bacillus is impermeable to the agency of the respired gases, it may be accessible through the more delicate processes of aeration performed in the pulmonary system as its ordinary function. But, M. Cornil continues, "to carry into all the cells and diverticula of the air passages the sulphuretted hydrogen, another gas or vapour is required to modify it to act upon all the micro-organisms in one series of maladies, and carbonic acid gas admirably answers for the purpose. It is very well tolerated by the large intestine; it is also rapidly absorbed and eliminated finally by the lung, along with the medicated gases which have been mingled with it." In a note which appeared in the "Comptes Rendus of the Academy of Sciences" of July 12th, 1886, M. Berger says:—"After having tried a number of reported balsamic substances, parasiticide or antiseptic, we have finally chosen sulphurous mineral waters. A current of 4 to 5 litres of carbonic acid gas, traversing from 250 to 500 grammes of sulphurous mineral water, is introduced into the rectum twice in twenty-four hours. After a little perseverance we have constantly observed a diminution even to the total suppression of the cough, a profound modification as to quality and quantity of the expectoration, suppression of sweats, and a general improvement, not alone in the incipient stage, but in confirmed phthisis. A daily stethoscopic examination permits us to record a progressive disappearance of moist rales." M. Cornil continues:—"Whatever may be the *modus operandi* of carbonic acid introduced by intestinal absorption into the venous blood, and finally expelled by the lung, we can say that when charged with suitable medications it modifies profoundly the respiratory rhythm, and renders hæmatosis more complete and easy. Finally, we can pronounce that rectal injections of carbonic acid and sulphuretted hydrogen gases constitute an excellent therapeutic remedy in phthisis and asthma; and this plan should be received with the greater favour, as ordinary therapeutics are almost powerless in the presence of phthisis." So much for Pneumotherapy.

Climato-therapy, as defined by Dr. Lindsay, next claims our attention, and this remedy, in suitable cases, was very fairly—from the standpoint of personal travel and reading—put as a possible alternative in the failure of domestic treatment. Doubtless we have all had experience in the person of our patients of the great advantage of removal to warm and dry, or cold and dry, atmospheres from our moist and changeable climate; but such advantages are not open to all, and it should be our duty to train our patients to take every advantage of the climato-therapy of his natal country. In the words of Dr. Herman-Weber—"All those who observe the favourable changes which occur in invalids in climacteric stations arrive, of necessity, at the following conclusions:—1. The methodical employment of the resources obtainable in the natal country, in almost every case, produce results analogous to those which are derivable from a sojourn in foreign stations. 2. Certain modifications in the interior of the establishment, in the manner of living, in the bed, in the chamber of the invalids, the interior of the mansion, may ameliorate sensibly the climacteric resources of the natal country. 3. Finally, in the region of our natal country, with habitations convenient and suitable, and under proper medical direction, one can obtain a great part of the advantages found in foreign climacteric stations. The sojourn in foreign territories being impossible for the greater number of invalids, whether on account of the expense, or other circumstances, the observation of these rules has a great deal of importance. This consideration is imposed on us by many other physicians. We recall, among other works, that of M'Cormac the elder. To this author the impurity of the air appeared to be the principal cause of phthisis. We cite also the works of Niemeyer, Rhoden, &c. Pettenkofer gives precise rules for clothing, regulation of bedrooms, and habitation. What physician has not seen frequently, when change to another climate was impossible, how an unexpected improvement has occurred by a change in the habits and manner of living. It is often difficult to habituate oneself to the outer air, and our precautions must be observed in climates less favourable, but a certain amount of audacity is necessary, otherwise the results are bad. In any case, the rules of sanitation, more or less accessible to every one—such as daily exercise in the open air, the inhalation of a large amount of pure air, simple hydropathic practices—allow the patient in his own country to derive better results than in foreign climates. Establishments conveniently arranged with great galleries, well ventilated and open to the sun, open or closed, in which proper nourishment is provided, and regulated at proper intervals by an experienced physician, according to circumstances, with regular exercise, gymnastic and hydropathic, allow of results better than in special establishments. We may express, without doubt, our conviction that the results obtained at Falkenstein and Davos should not be attributed to climate but to art

founded on nature." And we may say the same of the establishments at Ventnor, Bournemouth, and Torquay.

Dr. Bennett, of Mentone, in an article laudatory of M'Cormac's teaching, declared that those residents of London who visited him at Mentone, and maintained their English habits of closed bedroom windows and doors, died as rapidly at Mentone as in London, while those who lived chiefly in the open air, with open windows day and night, returned home better, and came back to him again in the next season. Dr. Lindsay paid a well-earned meed of praise to M'Cormac for his life-devotion to the prophylaxis of consumption.

I learn by the medical journals that an hospital for open-air treatment of consumption is prospering in London under the auspices of Dr. Neale. In a disease where so little, for so far, can be accomplished by medication, and so much by prophylaxis, the teaching of our late gifted townsman should be ever before our eyes.

March 30, 1887.

Some Local Meteorological Notes. By F. Howard Sinclair, M.D., L.K.Q.C.P.I., &c.

In a very interesting paper which was read in the Society a few evenings ago, the subject of the influence of climate in the treatment of phthisis was very exhaustively considered.

But it occurred to me that this item in the treatment of the working classes was quite lost sight of. It is admitted by all that the climate of Belfast is a very bad one indeed for phthisical patients; the atmosphere, even in the middle of summer, is essentially a moist and humid one, whilst in winter its cold dampness is exceedingly injurious.

When, however, circumstances admit of no alternative but to remain there, I believe that it is a matter of great importance for the invalid to know those local situations where life will at least have the most favourable chance of being prolonged.

The principal features which go to make a place a good or bad one for an invalid are—"temperature," "atmospheric pressure," "percentage of moisture," and "purity of the air," "sunshine," "wind," "nature of soil," "influence of trees and hills," and "efficient drainage and sewerage."

A very important point in connection with the climate of any place is the mean temperature of the air; but although two places may have the same mean temperature their climates may be totally different.

Let me mention the very well known case of two towns—Madrid and Mentone. In one month (during September) they were found to have the same mean temperature, although their climates were altogether different—the maximum and minimum means being 86·2° and 59·5°

respectively in Madrid, whilst in Mentone the maximum and minimum were 77·6° and 68°.

For the past seven weeks I have been taking a series of comparative observations as regards temperature between the north and south ends of the town.

Of course we all know the local reputation that these have respectively, the north being cold and bracing, the south being compartively mild and relaxing; but, so far as I know, no reliable observations as to the actual temperature have been taken.

For purposes of comparison ordinary thermometers are useless. In one establishment in town there were fourteen thermometers hanging on a screen. Of these no two were registering the same number of degrees. This would account for the extraordinary variations in temperature which are occasionally heard of, even in clinical records. I consequently got two Hicks's maximum and minimum thermometers, tested by Mr. F. Moore, optician, of High-street, which have been found very reliable.

The points chosen for taking the notes were Alexandra Gardens, on the Antrim-road, and Haypark-avenue, in Ballynafeigh.

To get the true temperature of the air it is necessary for the thermometer to be protected from the direct and indirect rays of the sun, and at the same time to be exposed to a free current of air. To have these two conditions complied with is not easy. I was, however, able to obtain a position in which the conditions were nearly equal.

These appear exceedingly trivial points, but they have much to do with the accuracy of the readings.

The readings were taken at 9 a.m. and 8 p.m. The amount of variation will be seen by referring to the table.

The humidity of the atmosphere is an exceedingly important point in summing up the factors of a climate suited for phthisical patients. No matter how high the temperature be, its good effects will be entirely counterbalanced by an atmosphere loaded with moisture. The influence of hill ranges in affecting the climate of a locality is well known. In this country Killiney, in Co. Dublin, is an instance. This place enjoys the reputation of having the lowest rainfall in Ireland. It is so situated that the prevailing wind before reaching it must pass over the Wicklow Mountains, the air being thus deprived of much of its moisture. Rostrevor in some degree resembles Killiney, and I believe that it is to a small extent true of Ballynafeigh.

I have tested the relative humidity of the two localities. The difference is not very great, but it is still appreciable. The shelter afforded by the Castlereagh Hills not only renders the air drier, but it is in a great measure due to them that the temperature is higher. Another factor in raising the temperature is the nature of the soil, which is a loose sand, reaching to the depth of thirty feet.

The readings should be regarded as approximations only to the correct indications of the amount of vapour present, as it is only by long averages that a true estimation can be arrived at.

The efficiency of the drainage of a locality has much to say to its healthy condition. Situated as it is, on a sloping incline, Ballynafeigh is naturally very well adapted for an efficient system of drainage. Its condition cannot at present be regarded as an altogether satisfactory one, the main sewer at present being discharged into the Lagan at the Ormeau bridge. This will, however, under the new system, be intercepted at South Parade, and thence be united with the low-level sewer at Lagan village.

As regards purity of the air—the prevailing wind being south-west, it is consequently at the windward side of the town, thus getting the least amount of smoke and impurity. Almost every suburb of Belfast has this advantage, as most of the smoke of the town blows in the direction of the Lough.

The accompanying table illustrates the paper :—

Analysis of Chart.

1887	Winds. No. of days		Thermometer					Humidity 0–100
			Day		Night		Range	
			Highest reading and highest average	Lowest reading and lowest average	Highest reading and highest average	Lowest reading and lowest average		
			°	°	°	°		
	N.E. 3	Ballynafeigh	56	30	54	29	max. 15	—
Feb.	S.W. 10	Ballynafeigh	48·2	40·7	46·3	37	min. 1	—
4th–28th	N.W. 8	Antrim-road	52	29	52	28	max. 18	—
	S.E. 4	Antrim-road	46	36	45	35·5	min. 3	—
	N.E. 10	Ballynafeigh	56	31	53	29	max. 12	max. 98 mean 81
March	S.W. 4	Ballynafeigh	47·04	38·4	44·8	36·6	min. 1	min. 40·7
1st–24th	N.W. 6	Antrim-road	52	30	51	26	max. 17	max. 98 mean 87
	S.E. 8	Antrim-road	44·2	35·2	42·1	32·9	min. 1	min. 52·2

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., B.A., Univ. Dubl.; F.K.Q.C.P.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, April 23, 1887.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

Towns	Weeks ending				Towns	Weeks ending			
	April 2.	April 9.	April 16.	April 23.		April 2.	April 9.	April 16.	April 23.
Armagh -	5·2	20·7	25·8	10·3	Limerick -	25·6	32·4	21·6	24·3
Belfast -	31·1	24·2	27·9	30·7	Lisburn -	43·5	19·3	33·8	14·5
Cork -	40·2	22·7	24·7	14·3	Londonderry	21·4	17·8	25·0	16·0
Drogheda	29·6	12·7	21·1	21·1	Lurgan -	15·4	25·7	25·7	25·7
Dublin -	30·4	29·2	33·1	31·0	Newry -	10·5	28·1	21·1	7·0
Dundalk -	17·5	26·2	30·6	17·5	Sligo -	43·3	9·6	33·7	9·6
Galway -	23·5	20·2	20·2	23·5	Waterford -	39·4	23·2	32·4	27·8
Kilkenny	29·6	76·1	12·7	71·9	Wexford -	38·5	38·5	21·4	21·4

In the week ending Saturday, April 2, the mortality in twenty-eight large English towns, including London (in which the rate was 19·7), was equal to an average annual death-rate of 21·6 per 1,000 persons living. In Glasgow the rate was 25·3 ; and in Edinburgh it was 21·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 30·6 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·2 per 1,000, the rates varying from 0·0 in Limerick, Londonderry, Waterford, Galway, Kilkenny, Drogheda, Lisburn, and Armagh, to 10·3 in Lurgan. The 3 deaths from all causes registered in the last-named district comprise 2 from diarrhœa. Among the 134 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from typhus, 2 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, and 3 from diarrhœa; the 62 deaths in Cork comprise 2 from enteric fever, and 2 from diarrhœa; one of the 9 deaths

in Wexford was caused by typhus; and the 4 deaths in Dundalk comprise 1 from diphtheria and 1 from enteric fever.

In the Dublin Registration District the births registered during the week amounted to 221—110 boys and 111 girls—and the deaths to 212—112 males and 100 females.

The deaths represent an annual rate of mortality of 31·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 30·4 per 1,000.

Twenty-one deaths from zymotic diseases were registered, being 2 over the number for the preceding week, but 9 under the average for the 13th week of the last ten years; they comprise 1 from varicella (chicken-pox), 4 from measles (all of which occurred in No. 4 South City—Grand Canal-street—District), 4 from scarlet fever (scarlatina), 1 from typhus, 3 from whooping-cough, 1 from ill-defined fever, 4 from enteric fever, 1 from diarrhœa, &c.

Eight cases of scarlatina were admitted to hospital, being 1 over the admissions for the preceding week; 4 scarlatina patients were discharged, and 54 remained under treatment on Saturday, being 4 over the number in hospital on Saturday, March 26.

Four cases of typhus were admitted to hospital, being 1 over the admissions for the preceding week; 2 patients died, and 7 remained under treatment on Saturday, being 2 over the number in hospital at the close of the preceding week.

There was but one case of enteric fever admitted, against 8 for the preceding week; 6 patients were discharged, and 18 remained under treatment at the close, being 5 under the number in hospital on Saturday, March 26.

Thirteen cases of measles (including 3 cases of Rötheln, or epidemic rose-rash) were admitted, being 4 over the admissions for the preceding week; 5 patients were discharged, and 28 remained under treatment on Saturday, being 8 over the number in hospital on Saturday, March 26.

Fifty-nine deaths from diseases of the respiratory system were registered, being 3 over the average for the corresponding week of the last ten years, and 6 over the number for the week ended March 26; they comprise 38 from bronchitis and 16 from pneumonia or inflammation of the lungs.

In the week ending Saturday, April 9, the mortality in twenty-eight large English towns, including London (in which the rate was 17·8), was equal to an average annual death-rate of 20·5 per 1,000 persons living. In Glasgow the rate was 25·1; and in Edinburgh it was 19·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 26·8 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·7 per 1,000, the rates varying from 0·0 in eleven of the districts to 4·4 in Dundalk—the 6 deaths from all causes registered in that district comprising 1 from diarrhœa. Among the 104 deaths from all causes registered in Belfast are 1 from typhus, 4 from whooping-cough, 2 from diphtheria, 1 from enteric fever, and 3 from diarrhœa. One of the 18 deaths registered in Kilkenny was caused by typhus; and the 9 deaths in Wexford comprise 1 from simple continued fever.

In the Dublin Registration District the births registered during the week amounted to 181—96 boys and 85 girls—and the deaths to 203—107 males and 96 females.

The deaths represent an annual rate of mortality of 30·0 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 29·2 per 1,000.

Twenty deaths from zymotic diseases were registered, being 8 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended April 2; they comprise 5 from measles, 2 from scarlet fever (scarlatina), 1 from typhus, 1 from whooping-cough, 1 from cerebro-spinal fever, 1 from enteric fever, 3 from diarrhœa, 2 from dysentery, 1 from erysipelas, &c.

Thirteen cases of scarlatina were admitted to hospital during the week, against 8 admissions for the preceding week; 19 scarlatina patients were discharged, 1 died, and 47 remained under treatment on Saturday, being 7 under the number in hospital on Saturday, April 2.

There were but 2 cases of enteric fever and 1 of typhus admitted during the week; 14 cases of the former and 7 of the latter disease remained under treatment in hospital on Saturday.

During the week ended April 2, 13 cases of measles had been admitted; in the present week the admissions fell to 8. The number of cases of this disease in hospital on Saturday, April 9, was 22, or a decline of 6 as compared with the number at the close of the preceding week, 14 patients having been discharged in the course of the week.

Fifty-nine deaths from diseases of the respiratory system were registered, being equal to the number for the preceding week, and 7 over the average for the corresponding week of the last ten years; they comprise 41 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, April 16, the mortality in twenty-eight large English towns, including London (in which the rate was 19·3), was equal to an average annual death-rate of 20·9 per 1,000 persons living. In Glasgow the rate was 27·3; and in Edinburgh it was 18·3.

The average annual death-rate represented by the deaths registered last week in the sixteen principal town districts of Ireland was 28·9 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·1 per 1,000, the rates varying from 0·0 in twelve of the districts to 5·1 in Lurgan—the 5 deaths from all causes registered in that district comprising 1 from diarrhœa. Among the 120 deaths from all causes registered in Belfast are 1 from typhus, 4 from whooping-cough, 2 from simple continued fever, and 2 from diarrhœa; and the 38 deaths in Cork comprise 1 from typhus.

In the Dublin Registration District the births registered during the week amounted to 175—97 boys and 78 girls—and the deaths to 231—103 males and 128 females.

The deaths represent an annual rate of mortality of 34·1 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 33·1 per 1,000.

Twenty-six deaths from zymotic diseases were registered, being 6 over the number for the preceding week, but 1 under the average for the 15th week of the last ten years; they comprise 7 from measles (5 of which were in No. 4 South City—Grand Canal-street—District); 4 from scarlet fever (scarlatina), 2 from typhus, 4 (all in No. 1 North City West—Langrishe-place—District) from whooping-cough, 2 from simple continued and ill-defined fever, 2 from enteric fever, and 1 from diarrhœa, &c.

Ten cases of scarlatina were admitted to hospital, being 3 under the admissions for the preceding week; 14 scarlatina patients were discharged, 3 died, and 40 remained under treatment on Saturday, being 7 under the number in hospital on Saturday, April 9.

Two cases of typhus and 5 of enteric fever were admitted to hospital; 9 cases of the former and 12 of the latter disease remained under treatment in hospital on Saturday, against 7 and 14 respectively on Saturday, April 9.

Ten cases of measles were admitted, being 2 over the admissions for the preceding week, but 3 under the number for the week ended April 2; 13 patients were discharged during last week, and 19 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Deaths from diseases of the respiratory system, which, in each of the two weeks preceding, had amounted to 59, fell last week to 45, or 3 under the average for the corresponding week of the last ten years; the 43 deaths comprise 28 from bronchitis, 5 from pneumonia or inflammation of the lungs, and 4 from croup.

In the week ending Saturday, April 23, the mortality in twenty-eight large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 21·6 per 1,000 persons living. In Glasgow the rate was 25·3; and in Edinburgh it was 19·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·3 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·9 per 1,000, the rates varying from 0·0 in twelve of the districts, to 4·6 in Waterford—the 12 deaths from all causes registered in that district comprising 2 from diarrhœa. Among the 132 deaths from all causes registered in Belfast are 1 from scarlatina, 1 from typhus, 4 from whooping-cough, 2 from diphtheria, 1 from enteric fever, and 1 from diarrhœa; and the 22 deaths in Cork comprise 1 from typhus.

In the Dublin Registration District the births registered during the week amounted to 213—109 boys and 104 girls—and the deaths to 212—118 males and 94 females.

The deaths represent an annual rate of mortality of 31·3 in every 1,000 of the estimated population; omitting the deaths of persons admitted into public institutions from localities outside the district, the rate was 31·0 per 1,000.

Twenty deaths from zymotic diseases were registered, being 9 below the average for the corresponding week of the last ten years, and 6 under the number for the week ended April 16; they comprise 6 from measles, 2 from scarlet fever (scarlatina), 2 from whooping-cough, 2 from diphtheria, 4 from enteric fever, 3 from diarrhœa, &c.

Fourteeen cases of scarlatina were admitted to hospital, being 4 over the admissions for the preceding week; 12 scarlatina patients were discharged, 1 died, and 41 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

Four cases of typhus, 4 of enteric fever, and 6 of measles were admitted; the admission of cases of the last-named disease are 3 under the number for the week ended April 16.

Fifty-one deaths from diseases of the respiratory system were registered, being 1 over the average for the corresponding week of the last ten years and 6 over the number for the week ended April 16; they comprise 29 from bronchitis and 15 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of April, 1887.

Mean Height of Barometer, - - -	30·051 inches.
Maximal Height of Barometer (on 17th, at 9 a.m.),-	30·636 „
Minimal Height of Barometer (on 23rd, at 9 a.m.), -	29·081 „
Mean Dry-bulb Temperature, - -	44·3°.
Mean Wet-bulb Temperature, - - -	40·8°.
Mean Dew-point Temperature, - - -	36·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·219 inch.
Mean Humidity, - - - - -	75·5 per cent.
Highest Temperature in Shade (on 18th), - -	62·2°.
Lowest Temperature in Shade (on 15th), - -	31·5°.
Lowest Temperature on Grass (Radiation) (on 15th),	23·9°.
Mean Amount of Cloud, - - - -	47·8 per cent.
Rainfall (on 10 days), - - - -	1·765 inches.
Greatest Daily Rainfall (on 29th), - -	·435 inch.
General Directions of Wind, - - -	N.E., W.N.W.

Remarks.

A cold, generally bright, dry month, with high barometer and frequently a large diurnal range of temperature, amounting to 20° or upwards on five days. The precipitation was almost entirely in the form of hail or sleet, but was limited to ten days—an absolutely dry period accompanying an anticyclone from the 6th to the 20th inclusive. Electrical disturbances occurred on five days; a faint aurora was observed on one night—the 11th. With the exception of 1879, this was the coldest April experienced in Dublin since the present records were commenced in 1860.

In Dublin the mean temperature (45·1°) was decidedly below the average (48·1°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 44·3°. In the twenty-two years ending with 1886, April was coldest in 1879 (the cold year) (M. T. = 44·5°), and warmest in 1865 and 1874 (M. T. = 50·4°). In 1886, the M. T. was 46·3°.

The mean height of the barometer was 30·051 inches, or as much as 0·194 inch above the average value for April—namely, 29·857 inches. The mercury rose to 30·636 inches at 9 a.m. of the 17th, and fell to 29·081 inches at 9 a.m. of the 23rd. The observed range of atmospherical pressure was, therefore, as much as 1·555 inches—that is, a little over one inch and a half. The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 44·3°, or 3·8° above the value for March, 1887; that calculated by Kaemtz's formula—viz., *min.* + (*max.* — *min.* × ·41) = *Mean Temp.*—from the means of the daily maxima and minima was 43·9°, or 3·1° below

the average mean temperature for April, calculated in the same way, in the twenty years, 1865–84, inclusive (47·0°). The arithmetical mean of the maximal and minimal readings was 45·1°, compared with a twenty years' average of 48·1°. On the 18th the thermometer in the screen rose to 62·2°—wind W.N.W.; on the 15th the temperature fell to 31·5°—wind N.W. The minimum on the grass was 23·9° on the same date. The rainfall was 1·765 inches, distributed over 10 days. The average rainfall for April in the twenty years, 1865–84, inclusive, was 2·029 inches, and the average number of rainy days was 15·0. The rainfall and the rainy days, therefore, were decidedly below the average. In 1877 the rainfall in April was very large—4·707 inches on 21 days; in 1882 also 3·526 inches fell on 20 days. On the other hand, in 1873, only ·498 of an inch was measured on 8 days, and in 1870 only ·838 of an inch fell, also on 8 days.

A lunar corona was seen on the 2nd. There was a faint aurora borealis on the 11th. The atmosphere was more or less foggy on the 10th, 11th, 12th, 29th, and 30th. High winds were noted on 7 days, but on no occasion was the force of a gale attained. Snow or sleet occurred on the 5th, 7th, 25th, 26th, and 27th—five days in all; and hail fell on ten days—viz., the 4th, 5th, 7th, 22nd, 24th, 25th, 26th, 27th, 29th, and 30th.

The month opened with northerly winds, and cool dry weather in Ireland, cold showers and squalls in Great Britain.

During the week ending Saturday, the 9th, the weather was chiefly cold and somewhat unsettled, so that falls of sleet, or snow, and hail were reported from most parts of the United Kingdom. In Dublin, a fall of cold rain on Monday, the 4th, was followed by hail showers; and at 5 p.m. next day a heavy thunder shower passed over the city from the northward, accompanied with darkness and heavy rain, hail, sleet, and snow. On Thursday, the 7th, there was a piercing E.N.E. wind, with light showers of sleet and hail.

Conditions now became anticyclonic, and remained so throughout Easter week, ending Saturday, the 16th. In Dublin the wind was almost continuously easterly or north-easterly, the air was dry and searching, and the weather was rainless, with much sunshine by day, but very low temperatures at night.

In the third week (17th to 23rd, inclusive), a gradual but decided change in the weather took place. On Sunday, the 17th, a large anticyclone lay over the greater part of western Europe, its central area—in which readings exceeded 30·7 inches—being found over the Netherlands and the S.E. of England. In Dublin the barometer read 30·636 inches at 9 a.m., and the air was singularly dry—the relative humidity at 11 a.m. falling to 48 per cent. Towards evening the barometer began to give way generally, and this change went on steadily until nearly the

close of the week, when readings sank below 29 inches in the N.W. of Ireland. At first the wind backed to W., and temperature rose to 62·2° in Dublin on the 18th; afterwards clouds increased, and on the 21st showers began to fall.

The weather of the last week (24th to 30th, inclusive) was most inclement—with thunder and hail storms, as well as showers of sleet and snow. The mean temperature in Dublin was only 41·8°, or 7° below the average, and 7·7° below the mean temperature of the week ending January 29, 1887. On Friday, the 29th, a partial shower of large graupel or soft hail occurred over the southern part of the city, yielding ·184 inch of water when melted.

The month was very cold—at first dry, then showery, with thunder and hail. In Dublin, the temperature fell to or below 32° on only one day in the screen, but on twenty days on the grass. The mean minimal temperature on the grass was 31·6°, compared with 29·2° in March, 29·8° in February, and 30·8° in January.

PERISCOPE.

RUBELLA.

While the broad lines separating measles and scarlatina are universally recognised, there has been anything but harmony among writers concerning certain anomalous forms of eruptive fever prevailing from time to time which present mingled characters of the two affections, or which appear to present the features of an independent affection. Ever since the middle of the last century, they have attracted much attention, and while, for the most part, they have been considered as aberrant forms of measles or scarlatina, there can be noticed a constantly recurring disposition to gather together, under a special designation, certain cases occurring sporadically or epidemically, which seemed to offer peculiarities distinguishing them from these two diseases. Gradually all affections having a red macular eruption, and not recognisable as measles or scarlatina, came to be described as Rötheln, and great confusion resulted, but within the last twenty years the question has assumed a phase that gives hopes of its satisfactory solution. The latest writer on the subject is Dr. I. E. Atkinson, who, in the January number of *The American Journal of the Medical Sciences*, studies the disease in a systematic manner, both historically and clinically. His conclusions are that—1. Rötheln is a specific, contagious, eruptive disorder. 2. While it possesses characteristics which, taken together, justify a reasonable degree of certainty in its diagnosis, it has no symptom that may not be and is not often assumed by measles. 3. A sporadic case, occurring in one who has never had measles and who affords no history of exposure to

Rötheln, may be diagnosticated with a fair degree of confidence, but not with absolute certainty. 4. The unqualified diagnosis of Rötheln should be made only during an epidemic in which all persons exposed, irrespective of former attacks of measles, are liable to be affected and in whom the symptoms follow a pretty uniform type. In the absence of a pronounced epidemic influence, a series of cases occurring in a household, a school, or an asylum, showing typical symptoms, may be diagnosticated as Rötheln with a fair degree of confidence. 5. In sporadic cases, where neither measles nor Rötheln has been experienced, a diagnosis of probable measles or Rötheln must be made, as conditioned by the resemblance of the symptoms and course to the type of one or the other affection.

ON SOME FORMS OF ALBUMINURIA NOT DANGEROUS TO LIFE.

The gravity of albuminuria, as a symptom, has been differently estimated at different times, but gradually it has come, in recent years, to be known that albumen often appears in the urine, even in considerable quantity and very persistently, in persons free from important organic malady. Indeed, it may be maintained that some patients with persistent albuminuria are yet eligible for life assurance at little, if at all, above ordinary rates. It is, therefore, important to know the characteristic features of these non-dangerous albuminurias. Dr. Grainger Stewart, in the January issue of *The American Journal of the Medical Sciences*, studies the following varieties—1st, paroxysmal albuminuria; 2nd, dietetic albuminuria; 3rd, albuminuria from muscular exertion; and 4th, simple persistent albuminuria; and illustrates each with reports of cases which are markedly characteristic. The diagnostic features of *paroxysmal albuminuria* are the sudden and copious occurrence of albumen in the urine with numerous casts, the process lasting only a short time and recurring at intervals with or without a perceptible exciting cause. The exciting cause, according to Dr. Stewart, is irritation of the kidneys from blood-changes. The treatment should be directed, on the one hand, to the avoidance or diminution of renal irritation; and, on the other, to the regulation of the hepatic function, and of the chemical processes in the body. Happily, the attacks are usually of brief duration, and he has never known them prove permanently injurious. *Dietetic albuminuria* is a variety which has long been more or less distinctly recognised. Some people suffer from it whenever they indulge in certain articles of diet. In some cases one kind of food, in others many require to be prescribed; cheese, pastry, and eggs are among the more common offenders. Of this group our present knowledge does not suffice to afford a satisfactory explanation. Those cases of *albuminuria following upon muscular exertion*, Dr. Stewart is disposed to attribute to a general change in vascular activity. The principal indications for their treatment are met by rest, judicious diet,

and attention to the general health. Those remedies which act upon the muscular fibres of the vessels deserve trial. The features of *simple persistent albuminuria* are the constant presence of albumen, usually in small quantity, unattended by tube-casts, diminution of urea, by increased muscular tension, cardiac hypertrophy, or other consequence of renal malady, persisting for a period of months or years, and little influenced by diet or exercise. Dr. Stewart concludes his study with a consideration of the prognosis of these groups.

AN EXPERIMENTAL STUDY OF MYCOTIC OR MALIGNANT ULCERATIVE ENDOCARDITIS.

Malignant ulcerative endocarditis is a form of lesion always associated with some kind of bacteria. The causative relation of these bacteria to the lesions are points upon which Dr. T. Mitchell Prudden seeks to throw some light in a paper in the January number of *The American Journal of the Medical Sciences.* Dr. Prudden shows that bacteria are frequent in a certain proportion of cases of acute ulcerative endocarditis in the cardiac and, when these exist, in the peripheral lesions. These bacteria are small and of spheroidal form in almost all of the cases thus far described; but in a few cases the presence of bacilli has been noted. There are cases of ulcerative endocarditis with extensive destruction of tissue and large formation of thrombi, in which the lesions are entirely free from bacteria. In these cases, as a rule, the endocardium is the seat of an old inflammatory process, and the peripheral embolisms, infarctions, &c., do not contain bacteria. In many cases of acute ulcerative endocarditis associated with bacteria, the valves and endocardium are also the seat of old inflammation. The destructive process and formation of thrombi in the heart-valves and endocardium may be as marked and extensive in the cases in which the bacteria are absent as in those in which they are present; but in the latter class of cases the embolic lesions which are apt to be developed are of an infectious nature, and the general course of the disease is apt to bear the stamp of an acute infectious disorder. The gross appearance of the valvular lesion does not always or usually enable us to distinguish between these two forms of disease. Bacteria are sometimes present in cases of acute vegetative endocarditis, but in the lesions of chronic proliferative endocarditis they do not appear to occur at all. The bacteria which are present in the cardiac and peripheral lesions in cases of malignant ulcerative endocarditis are the causative factors in the disease. The bacteria apparently produce the cardiac lesions by lodgment on the surface of the valves and endocardium, when the latter are rendered vulnerable to their action by either mechanical or chemical injury; or by the presence of old inflammatory alterations; or by conditiors unknown to us. Bacterial embolism of blood-vessels of the heart-valves is apparently not of frequent occurrence,

as was formerly believed. The only bacteria which have been thus far absolutely identified as occurring in the lesions of malignant ulcerative endocarditis in man are Streptococcus pyogenes and Staphylococcus pyogenes aureus. This identification has been made in six cases. Dr. Prudden has demonstrated that other species of bacteria than those mentioned are capable of causing similar lesions in rabbits under similar experimental conditions. Finally, Dr. Prudden points out that, in view of the significant relationship of the bacteria of pyæmia and suppuration in malignant ulcerative endocarditis in the cases thus far fully examined it is evident that a demonstrably diseased condition of the heart valves, or a previous history which would suggest the possibility of such a condition, should be an additional incentive to the practice of a vigilant antisepsis in operations, however simple, upon this class of cases.

BACTERIOLOGY.

Mr. Watson Cheyne, in the January number of *The American Journal of the Medical Sciences*, gives a full yet concise summary of our knowledge on the relation of bacteria to the living animal body. He points out that the parasitic bacteria differ very much in their seat and mode of action from one another. Some grow on the surface of wounds or on mucous surfaces, penetrating, as a rule, for only a short distance into the underlying tissues; such are the gonococcus, the diphtheritic bacillus, &c. Others grow by preference in the lymph channels (the micrococcus of erysipelas); some grow in the tissues, especially in the cellular elements (the leprosy bacillus, the tubercle bacillus, &c.); and others grow in the blood (anthrax, probably the organisms of the specific fevers, &c.). And there are all sorts of transitions, the same organism growing at times only locally, at others in the blood-vessels. Again, some bacteria are specific on one species of animal and not on another; thus the bacillar septicæmia of mice does not, so far as we know, affect man; while, on the other hand, several infective diseases of man do not apparently affect the lower animals. The conditions necessary to enable these parasitic organisms to enter and live in the living body are manifold, and are as yet but imperfectly known. Some of them, however, are indicated. Mr. Cheyne shows that the point of entrance of the bacteria exercises a great influence on the result. The gonococcus, for instance, grows apparently only on the mucous membrane of the urethra, vagina, and eye; the occurrence of inflammation of other mucous membranes from infection with gonorrhœal discharge is very problematical. The cholera and typhoid organisms are apparently only pathogenetic in the small intestine. The idea that typhoid fever can be acquired by inhalation is extremely doubtful. In other cases the infection cannot occur through an unbroken surface. This is probably the case with syphilis, and possibly also with erysipelas. Other organisms, again, will

act only when introduced into the subcutaneous or submucous cellular tissue; such are the bacillus of malignant œdema of guinea-pigs and mice. Again, in some of the bacteria which are pathogenic in the lower animals, the infection is accomplished only by introducing the organisms directly into the blood stream. Although a full development of the disease is, in many instances, obtained only by the introduction of the virus into a particular part, a modified form is often produced by inoculation in other places. A good example of this is found in the case of symptomatic anthrax. A very important point in regard to infection is the dose of the virus which comes into action. As the result of his experiments Mr. Cheyne finds that in certain cases the introduction of a single bacterium is sufficient to cause the disease; in others, a large number are requisite to produce a fatal result, but in all these cases a smaller dose will produce a local effect in the form of inflammation. But there is a further most important point in connection with this matter—viz., that in many cases the small dose which produces a local effect, at the same time protects the animal from the fatal result if a larger dose be subsequently introduced. Mr. Cheyne fully discusses the question of immunity following an attack of many diseases, and then the question of the attenuation of virus and protective vaccination, and concludes with a consideration of the conditions of infection and the question of septic intoxication.

DIPHTHERIA.

Dr. N. Lunin records the observation of 296 cases of diphtheria, as treated in the Children's Hospital, in St. Petersburg, consisting of the *fibrinous* form, in which there was more or less fibrinous exudation on the fauces, and the *septic* or gangrenous form, in which there was frequently not much membrane, but a phlegmonous swelling of the soft palate and tonsils, with much cellulitis of the neck and swelling of the glands. The remedies employed were corrosive sublimate, ferric perchloride, chinolin, resorcin, bromine, and oil of turpentine. The conclusion to which the author came was that turpentine gave the best results in the fibrinous form, and liq. ferri perchloridi in the septic form. Of the 296 cases 95 per cent. were complicated with diphtheria of the air passages, of which 72 per cent. died. Tracheotomy was performed in 35 cases, of which 5 recovered, though one died of paralysis of the heart after the removal of the tracheotomy tube. The urine was examined in 217 cases, with the result that 161, or 74 per cent., had albuminuria, of which 86 died. Of the other complications 22 had paresis of the soft palate, 2 paresis of the superior laryngeal, 11 paralysis of the heart, and 1 universal paresis.—*Medical Chronicle*, from *Archiv. für Kinderheilkunde.*

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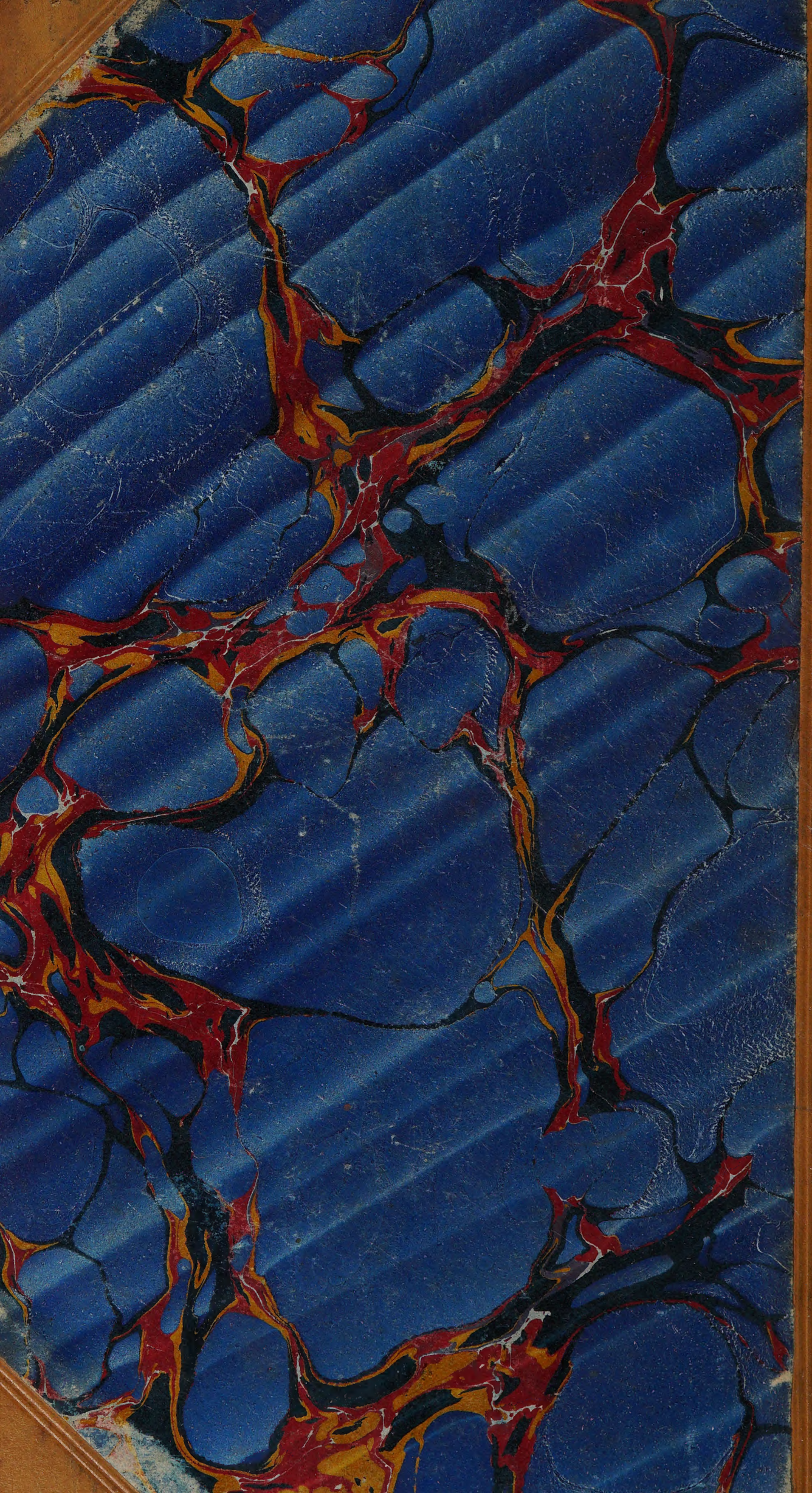
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